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INTERNATIONAL JOINT COMMISSION

HEARINGS

OF THE

INTERNATIONAL JOINT COMMISSION

ON THE REFERENCE BY THE UNITED STATES
AND CANADA

IN RE

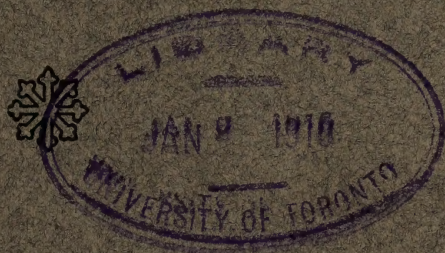
LEVELS OF THE
LAKE OF THE WOODS

AND ITS TRIBUTARY WATERS AND THEIR FUTURE
REGULATION AND CONTROL

BEING

FURTHER PUBLIC HEARINGS

AT INTERNATIONAL FALLS AND WARROAD, MINN., AND
KENORA, ONTARIO, SEPTEMBER 7-14, 1915



WASHINGTON
GOVERNMENT PRINTING OFFICE

1915



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INTERNATIONAL JOINT COMMISSION (U.S. and
"Canada") 1909-

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INTERNATIONAL JOINT COMMISSION.

CANADA.

CHARLES A. MAGRATH, CHAIRMAN.
HENRY A. POWELL, K. C.
P. B. MIGNAULT, K. C.

LAWRENCE J. BURPEE, *Secretary.*

UNITED STATES.

OBADIAH GARDNER, CHAIRMAN.
JAMES A. TAWNEY.
R. B. GLENN.

WHITEHEAD KLUTTZ, *Secretary.*

LETTER OF REFERENCE.

DEPARTMENT OF STATE,
Washington, June 27, 1912.

INTERNATIONAL JOINT COMMISSION
OF THE UNITED STATES AND CANADA,
Washington, D. C.

SIRS: I have the honor to inform you that at the joint request of the Government of the United States and of the Government of the Dominion of Canada, under the provisions of Article IX of the treaty of January 11, 1909, between the United States and Great Britain, the question or matters of difference set forth below, which have arisen between them involving the rights, obligations, or interests of each in relation to the other or to the inhabitants of the other, along their common frontier between the United States and the Dominion of Canada are hereby referred to the International Joint Commission for examination and report upon the facts and circumstances of the particular questions and matters referred, together with such conclusions and recommendations as may be appropriate.

The questions so referred are as follows:

1. In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from that lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, is it practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and if so, at what level?

2. If a certain stated level is recommended in answer to question 1, and if such level is higher than the normal or natural level of the lake, to what extent, if at all, would the lake, when maintained at such level, overflow the lowlands upon its southern border, or elsewhere on its border, and what is the value of the lands which would be submerged?

3. In what way or manner, including the construction and operation of dams or other works at the outlets and inlets of the lake or in the waters which are directly or indirectly tributary to the lake or otherwise, is it possible and advisable to regulate the volume, use, and outflow of the waters of the lake so

as to maintain the level recommended in answer to question 1, and by what means or arrangement can the proper construction and operation of regulating works or a system or method of regulation be best secured and maintained in order to insure the adequate protection and development of all the interests involved on both sides of the boundary, with the least possible damage to all rights and interests, both public and private, which may be affected by maintaining the proposed level?

I have the honor to add that the Government of the United States will be glad to assist the commission in obtaining any information which it may desire in the course of its investigation of the matters herein referred for its examination and report.

I am, sirs, your obedient servant,

P. C. KNOX.

HEARINGS OF THE INTERNATIONAL JOINT COMMISSION IN RE LEVELS OF THE LAKE OF THE WOODS.

INTERNATIONAL JOINT COMMISSION,
Warroad, Minn., Tuesday, September 7, 1915.

The International Joint Commission, pursuant to public notice, met at Warroad, Minn., on Tuesday, September 7, 1915, at 10 o'clock a. m., to hold additional public hearings on the question of the level of the Lake of the Woods, referred to the commission by joint action of the Governments of the United States and the Dominion of Canada.

Present: Obadiah Gardner, Charles A. Magrath, James A. Tawney, Henry A. Powell, R. B. Glenn, P. B. Mignault; Whitehead Kluttz and Lawrence J. Burpee, secretaries.

Also, Arthur V. White, of Toronto, and Adolph F. Meyer, of St. Paul, consulting engineers to the commission.

Mr. GARDNER (chairman). Ladies and gentlemen, you will please come to order. The time having arrived for which this meeting was called, I want to say that inasmuch as this Lake of the Woods controversy was referred to this commission before I became a member thereof, and as Mr. Tawney was one of the committee having this investigation in charge from the outset and is more familiar with all the details involved up to this moment, I am going to call upon him to preside. Mr. Tawney, will you please take the chair.

Mr. TAWNEY. Mr. Chairman, I appreciate the courtesy of being asked to preside at this hearing. The first thing to be done will be to have the notice read calling this meeting or appointing this time and place for the hearing to begin. The secretary will now read the notice.

(Secretary Kluttz then read the notice referred to, which is as follows:)

INTERNATIONAL JOINT COMMISSION,
Washington, D. C., July 6, 1915.

DEAR SIR: At the hearings held by the International Joint Commission at International Falls, Warroad, and Kenora, in September, 1912, it was announced that at a later date, when the consulting engineers had completed their surveys in connection with the levels of the Lake of the Woods, the commission would hold further hearings. At the same time it was announced that all interested parties would then be given an opportunity to submit such additional testimony as might be of service to the commission in making its final report to the Governments of the United States and Canada on their joint reference under Article IX of the treaty of January 11, 1909, of certain questions concerning the levels of the Lake of the Woods. Included in said reference are the following questions:

"1. In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from that lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, is it practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and if so, at what level?"

"2. If a certain stated level is recommended in answer to question 1, and if such level is higher than the normal or natural level of the lake, to what extent, if at all, would the lake when maintained at such level overflow the lowlands upon its southern border, or elsewhere on its border, and what is the value of the lands which would be submerged?"

In order that the owners of the land on either border of the lake may have ample time to prepare and be fully heard on the question of the value of their lands that would be submerged at any of the levels indicated on the inclosed maps, and that the fishing and harbor and navigation interests may also be heard at the same time, you are hereby notified that the commission has fixed upon the following places and dates for that purpose:

At Warroad, beginning September 7, 1915, at 10 o'clock a. m.; at International Falls, beginning September 10, 1915, at 10 o'clock a. m.; at Kenora, beginning September 13, 1915, at 10 o'clock a. m.

All other interests involved in the final conclusions of the commission under the foregoing reference will be given an opportunity to be heard at a time and place hereafter to be fixed by the commission when the engineering data in relation thereto is available.

For the information of those interested maps are inclosed showing the results of the surveys carried on under the direction of the commission. On these maps are indicated by brown-colored lines, called contour lines, the areas of land which would be submerged if the level of the lake were maintained at any of the levels indicated by the contour lines as shown on the map.

The contour line 1,060, for instance, represents an elevation of 1,060 feet above mean level. The accompanying table will enable you to find the equivalent of the local gauge readings in the elevations shown on the maps. These maps will assist you in placing before the commission evidence as to lands which will be affected at any special level which the commission may recommend. Additional copies of the above maps may be obtained from the State auditor at St. Paul, from the Hon. Paul Marschalk at Warroad, or from the town clerk at Warroad. Any additional information required may be obtained from the secretaries of the commission at Washington, D. C., or Ottawa, Canada.

Very truly, yours,

WHITEHEAD KLUTTZ, *Secretary.*

(Inclosure: Maps and table.)

Mr. KLUTTZ. Notices of the hearings at Warroad and International Falls were sent to the following persons and newspapers:

Secretary of State, Washington, D. C.
 War Department, Washington, D. C.
 Army engineers, Detroit, St. Paul, and Duluth.
 Hon. Moses E. Clapp, St. Paul, Minn.
 Hon. Knute Nelson, Alexandria, Minn.
 Hon. Halvor Steenerson, Crookston, Minn.
 Hon. C. B. Miller, Duluth, Minn.
 Hon. C. A. Lindbergh, Little Falls, Minn.
 C. J. Rockwood, Minneapolis, Minn.
 Andrew Landby, Warroad, Minn.
 V. B. Chopin, Warroad, Minn.
 Thomas McCagherty, Warroad, Minn.
 Nordahl Carlson, Warroad, Minn.
 J. W. Harrison, Warroad, Northwest Angle, Minn.
 William H. Neal, Warroad, Minn.
 W. M. Zippel, Warroad, Minn.
 Alexander Fosmark, Warroad, Minn.
 Governor of Minnesota, St. Paul, Minn.
 Paul Marschalk, Warroad, Minn.
 City recorder, International Falls, Minn.

Town clerk, Warroad, Minn.
 State auditor, St. Paul, Minn.
 Cooke & Berkman, Chisholm, Minn.
 John Arnesen, Lude, Minn.
 Lewis Arnesen, Arnesen, Minn.
 Randor Carlson, Swift, Minn.
 Lars Engstrom, Arnesen, Minn.
 A. A. Gruhlke, Arnesen, Minn.
 V. A. Jacobs, Zippel, Minn.
 Mrs. Annie Johnson, Roosevelt, Minn.
 Magny Johnson, Roosevelt, Minn.
 Charles Lamberson, Arnesen, Minn.
 A. M. Landby, Swift, Minn.
 Alfred M. Lawson, Warroad, Minn.
 Carl Oberg, Lude, Minn.
 Mauritz Marschalk, Lude, Minn.
 Charley Johan Olson, Roosevelt, Minn.
 Andrew W. Peterson, Zippel, Minn.
 Peter Peterson, Roosevelt, Minn.
 Hans R. Selvog, Warroad, Minn.
 Gunhild Tweit, Arnesen, Minn.
 Olof Tweit, Arnesen, Minn.
 Torjus Tweit, Arnesen, Minn.
 Ferdinand Urtel, Swift, Minn.
 Wilhelm Zippel, Zippel, Minn.
 Hattie Barton, Ericsburg, Minn.
 John E. Samuelson, Providence Building, Duluth, Minn.
 J. E. Lundrigan, Providence Building, Duluth, Minn.
 James Brennan, Ranier, Minn.
 Josephine Brennan, Ranier, Minn.
 Emma A. Coxon, Ranier, Minn.
 Algot Erickson, Ranier, Minn.
 Carl J. Erickson, Ranier, Minn.
 Frederick Heinemann, International Falls, Minn.
 Martin Mathison, Ericsburg, Minn.
 L. A. Ogaard, International Falls, Minn.
 Bert T. Pease, International Falls, Minn.
 George Watson, Ericsburg, Minn.
 Thomas Watson, Ray, Minn.
 Freddie Kelley, International Falls, Minn.
 John Skoglund, Ericsburg, Minn.
 Selectmen, village of Ranier, Ranier, Minn.
 R. H. Bennett, International Falls, Minn.
 Irving J. Clark, Plymouth Building, Minneapolis, Minn.
 Archer & Pickering, Virginia, Minn.
 John A. Keyes, Manhattan Building, Duluth, Minn.
 International Falls Echo, International Falls, Minn.
 The Journal, International Falls, Minn.
 Editor News-Tribune, Duluth, Minn.
 Pioneer, Warroad, Minn.
 W. G. McMurchy, representing the Minneapolis Times, 601 Munsey Building,
 Washington, D. C.
 James Gray, representing the Minneapolis Journal, 901 Colorado Building,
 Washington, D. C.
 Arthur Dodge, representing the Minneapolis Tribune, 229 Woodward Building,
 Washington, D. C.
 John E. Monk, representing the St. Paul papers, 208 Hibbs Building, Wash-
 ington, D. C.

Mr. TAWNEY. We will now have those who appear as representa-
 tives of the two Governments, the Province of Ontario, and the
 State of Minnesota, enter their appearances, and then those who rep-
 resent private interests on the Lake of the Woods may enter their
 appearances so that we will know who the gentlemen present
 represent.

(The following appearances were entered:)

Manton M. Wyvell, Washington, D. C., representing the Government of the United States.

Maj. E. D. Peek, Corps of Engineers, United States Army.

Capt. Frank Truax, Corps of Engineers, United States Army, and E. J. Dugan, representing the harbor and navigation interests at Warroad.

Edward Anderson, K. C., Winnipeg, Canada, representing the Dominion of Canada.

W. J. Stewart, Ottawa, Canada, chief hydrographer for the Dominion of Canada.

J. B. Challies, Ottawa, Canada, superintendent of water-power for the Dominion of Canada.

Hon. Halvor Steenerson, Crookston, Minn., representing the people of the ninth congressional district of Minnesota.

Frank H. Keefer, K. C., Port Arthur, Ontario, representing the Province of Ontario in respect to all interests involved.

H. G. Acres, Toronto, Canada, representing the Hydroelectric Power Commission of Ontario.

Isaac Campbell, K. C., Winnipeg, Canada, representing the city of Winnipeg.

C. J. Rockwood, Minneapolis, Minn., representing the Rainy River Improvement Co., the Minnesota & Ontario Power Co., the Keewatin Lumber Co., and the Keewatin Power Co.

D. H. Laird, Winnipeg, Canada, representing the Winnipeg Electric Railway Co.

Hon. Paul Marschalk, Warroad, representing the navigation and fishing interests.

C. E. Berkman, Chisholm, Minn., representing the interests in the sixth congressional district of Minnesota.

Mr. TAWNEY. Gentlemen, if there are no further appearances, I desire to make just a brief statement in addition to what has been presented by the reading of the notice of the time and place for the beginning of this hearing on the Lake of the Woods.

You are all familiar with the questions the two Governments have submitted to the commission for investigation. This reference has been made under Article IX of the treaty of January 11, 1909, under which article the jurisdiction and power of the commission are restricted to that of investigating and reporting on all matters referred by the two Governments for that purpose. Under this article we do not have the power to decide, but merely to investigate and report our conclusions and recommendations.

Some of the questions in the reference under consideration are how to secure the most advantageous use of the waters of the Lake of the Woods for domestic and sanitary purposes, for navigation and power purposes, for fishing, and the most advantageous use of the shores of the lake; also what is the natural or normal level of the lake and what level would best subserve the interests on both sides of the line with the least possible damage to agriculture; and if the commission finds it would subserve the interests of the people on both sides of the line to recommend a given level or range of levels of the lake we are also required to report to the two Governments the amount of land that would be submerged on the shore of the lake, as well as the value of that land.

The commission appeared on the 18th of September, 1912, in Warroad for the purpose of conducting a preliminary hearing, primarily for the purpose of acquainting the consulting engineers and the commission with the problems that were involved in this investigation. In closing the hearing on the evening of the 19th of September this statement was made, and I repeat it now for the purpose of showing that the commission has, in providing for this hearing, carried out what was then promised by the commission to those who are interested:

I wish to say again, gentlemen, and especially to the farmers who are here, that this hearing is primarily for the purpose of acquiring such information as we can relative to the engineering problems that are involved in this investigation, and that after the engineers have formulated or worked out these problems and submitted their report, if it becomes necessary by reason of their recommendations to make any further investigation respecting the effect of the level of the Lake of the Woods, there will be very full opportunity given to everybody in this section of the country to be heard with respect to the effect upon their lands of such level, in order that the commission may ascertain and report to the two Governments the value of the land that would be overflowed.

The engineers, acting under the direction of the commission, have substantially completed their work. It is not ready for distribution, but for the last two months the facts have been available showing the contour lines along the south shore of the Lake of the Woods and the land that is involved. The contour lines indicated upon the map show the different elevations or the different levels of the lake, using the sea level as the base or datum. These maps have been sent out to the people along the south shore of the lake and have no doubt been studied by them, so that they are quite familiar with the effect of any given level that may be adopted or hereafter recommended by the commission. This hearing is for the purpose, first, of ascertaining the value of the land that would be submerged as shown upon the maps, and also to ascertain how the interests of navigation and the harbor interests, as well as the fishing interests, would be affected by any given level indicated upon the maps and which the commission might hereafter recommend.

In order that you may have information as to what has been done by the commission under this reference during the past three years, and that you may have an opportunity to make such inquiries as you may deem necessary, the commission has concluded to ask the engineers who have been working under our direction to make a brief statement, first, as to the organization and how the two countries have been represented in this work—how they have worked together—and then make a full explanation of the data that have been obtained and what such data indicate with reference to the physical facts in respect to the levels of the lake and in respect also to the actual level of the lake prior to the construction of these dams and the actual level during the past 21 or 22 years. We will call upon Mr. White first to give such explanation. It is understood that those testifying to facts in this investigation will be required to testify under oath, and it has been suggested that the engineers who have been employed by the commission should also give such statements as they have to make respecting the organization and the character of the work under oath.

**STATEMENT OF MR. ARTHUR V. WHITE, OF TORONTO, CANADA,
CONSULTING ENGINEER, INTERNATIONAL JOINT COMMISSION.**

(Arthur V. White, being duly affirmed, made the following statement:)

Mr. WHITE. Mr. Chairman and gentlemen: In 1912, when the preliminary hearings were held, it was announced that they were held largely with the object of according the engineers of the commission the fullest detailed information in order to furnish a reliable guide for them in conducting their work, so that they would not overlook any features which were of importance to interested parties—probably more particularly with respect to the riparian owners.

The testimony given at those hearings brought out, for one thing, an important feature which has not been lost sight of, and that is this: The commissioners were handicapped through not having a reliable set of maps upon which to identify the various parcels of land under consideration, and, besides, there was no definite information existent regarding the portions of land that would be flooded if the waters were at certain elevations. The commissioners instructed the engineers to proceed to accurately survey the land bordering on the shore of the lake, and to prepare maps that could be furnished interested parties, from which they would be able to ascertain facts which otherwise could not come within their knowledge. Those maps are now in your possession. I would like to ask Mr. Landby, as an interested individual, if those maps are representative of his land, and also whether he, as an interested party, has formed any opinion respecting the character of the men who were conducting that work for the commission.

Mr. LANDBY. I will state that I have examined the map for the territory where I reside, not only referring to my property but to my neighbors' property, and I will say that the maps could not be any more correct than they are. I will say, further, that I am familiar with the conduct of the boys who were there taking care of the survey. Mr. White was there frequently, and Mr. Rannie and Mr. Garen stopped at my house. They were all faithful, waded in water up to their arms, and I am surprised to see that they could under those conditions get the contour lines as correctly as they are.

Mr. WHITE. The commissioners felt that until the facts were properly before the interested parties the interested parties themselves were at a great disadvantage in making their representations before the commission, and one of the objects in my making these prefatory remarks is to establish in the minds of the interested parties that assurance toward the work of the commission and the consulting engineers which we believe they are entitled to have. In making up the personnel of the survey parties, recognizing that the work was to be done in both countries, instead of having the United States engineers, for example, do the work in their own country, we decided to break the parties up so that there would be alternatively with each party a representative chosen one from the United States, and one from Canada, and that procedure was maintained down to the rodmen. Then, in the two main camps there was one of the Canadian engineers in one party, and over the other there was a United States

engineer. The office work, especially with regard to the maps, was conducted in a similar manner; and while compiling the field data on the maps Mr. Meyer had his own representative in the office supervising and checking the work and giving his approval as he found this or that item completed, thus the maps as presented and the compilations of the areas have been concurrently supervised by representatives of both countries.

In carrying on the work we have throughout been greatly facilitated by assistance supplied by Government departments, both Federal and State, on either side of the boundary. If it had not been for this cooperation we would not have been able to be ready with the work for this meeting.

In presenting the areas two things should be noticed, one that the areas that we have tabulated have been taken off large scale original manuscript maps, and the results, therefore, are somewhat closer in approximation than could be obtained by anyone seeking to ascertain the same information from the published maps. The second point is, that in order to facilitate reference to this or that area and preserve the identity of the various measurements as recorded, we have given the readings as actually taken off by the instruments, but it must not be inferred that the areas have been determined actually with the precision that might be indicated by the decimal of acres given.

Mr. POWELL. The readings are substantially correct?

Mr. WHITE. The readings are accurate. It would not, however, be possible in an area of floating bog for two individuals to go out and get the same measurements, but we put our results down, and they are within good limits of accuracy.

In conducting these surveys our engineers were instructed to watch for all physical evidences along the shores of the lake of previous high watermarks, as well as any evidences that might exist of low stages of water. In prosecuting their research the consulting engineers have unearthed, so to speak, or run across, information which was neither within the knowledge of the commissioners nor within the knowledge of the engineers at the time that this reference was filed. We feel that those who are interested along the shores of the lake will pay homage to any facts that are clearly presented and substantiated by proper evidence, and that it would not be their wish to contend, for example, that such and such a stage of the lake had never existed if unmistakable physical evidence and testimony on the part of the observers substantiate that the lake had been at those stages. I will refer to this again in a moment.

There were also found records of gauge heights which could not have been within the possession of private interested parties—information that was disclosed by the search through State and other papers on file only in the offices where such data were located. By way of illustration, we had difficulty in giving full credence to certain records taken by the provincial gauge reader of the Province of Ontario during a portion of 1904. Mr. Meyer was able to find in the office of the United States engineers that on March 11, 1904, an engineer, Mr. R. Davenport, had been sent to take by instrumental determination the stage of the water at Warroad. The notes resulting from that visit were sufficient to give us a creditable record during a portion of the year for which we would otherwise have been at a loss to give a

figure. Also in 1906, when they were proposing alterations in the eastern outlet of the Lake of the Woods, an engineer, Mr. G. M. Wynn, was sent from Montreal to make some preliminary surveys in view of the proposed increasing of the municipal plant at Kenora. While there he made instrumental determinations. Those records were located and they also have given valuable assistance.

One other illustration. In 1895 Mr. James C. Kennedy, an engineer for the Keewatin Power Co., cut on the shores of the Lake of the Woods in four different places a chisel mark with the letters "H. W." over it, standing for "high water," and under affidavit he set forth the circumstances which attended his cutting of these marks, stating that to the best of his judgment they were high-water marks at that time. The elevations of those high waters have been ascertained. They range from sea-level datum, 1,062.5, to about 1,062.9. The significance of these comments is this: That if, as a result of our research we have been able to disclose facts not formerly known, then interested parties, whether they are riparian owners or other interested parties, will be quite as ready, we believe, when the explanation and evidence are furnished them in printed form, as any others may be, to give credence to these data and allow them to take their place in the considerations which it is necessary for the commission to have in view in connection with a determination of the most satisfactory levels or range of levels.

Those who have come on the lake within more recent years may have thought that the phenomena with respect to range of levels have been fully disclosed within the period over which their observation extends. By way of homely illustration—persons who went through the financial depression of 1907 might have thought there was nothing like it before, but if they had gone through the depression of 1837, or the depression extending from 1873 to 1878 and concentrating itself in 1877, they would know that at long recurring cycles there would be more pronounced depressions than might happen within a smaller compass of years. So in the course of our study of this evidence existent around the shores of the lake we have found certain pertinent data extending back even as far as about 1823, when Prof. Keating was dispatched by the United States Government to examine the shores of the lake. He has referred to certain matters appertaining to levels in his book entitled "The Narrative of an Expedition to the Source of the St. Peter River." In 1873 Mr. G. M. Dawson, geologist to the British-North American Boundary Commission, in his "Report of the Geology and Resources of the Region in the Vicinity of the Forty-ninth Parallel," states with respect to the Lake of the Woods:

The whole of its southern and southwestern margin, is formed of sand and detrital matter, and sweeps around in large gently rounded bays, very different from the narrow, irregular passages of the north. This southern portion of the lake is also comparatively shallow, and perpetually extending its border southward and westward, among the swamps, sand hills, and lagoons by which it is there surrounded, and spreading detritus thus attained over its bed. Evidence of this is everywhere apparent along its southern margin, where tamarack swamps are in some places being so rapidly encroached on, that the trees may be seen along the shore bending forward at every angle and falling into the lake. Some parts of the shore, have in this way become surrounded by an almost impassable belt of tangled and water-worn trunks and branches.

This geologist also states:

The greater part of the southern and western margins of the lake is utterly useless, and a more forbidding and desolate region can scarcely be imagined. The immediate border of the lake, is here formed by a low ridge of sand often blown into miniature sand hills, but sometimes bound together by the roots of various grasses. Behind this margin is very generally a stretch of grassy swamp and lagoon, of a mile or two in width, and bordered in the distance by a forest of tamarack (*Larix Americana*) growing on a scarcely less flooded soil. In some places, low, swampy savannah fronts directly on the lake, and this I have seen fringed, after a gale, by a belt many feet in width, of brown vegetable pulp, equally impassable to walk on, and impassable for the canoe. On the other part of the coast, on gaining the summit of the peaty bank a few feet in height, which is breaking off under the action of the waves, an expanse of swamp, with dead tamarack trees, stretches as far as the eye can reach.

One more illustration: In his report of the geology of the Lake of the Woods region, published in 1883-84, Mr. A. C. Lawson states that there has been a range of fluctuation in level of the Lake of the Woods of 10 feet.

I will state the object in drawing attention to such passages as these. It is not in any sense to belittle land that is good land, or any good land that has been washed away by wave action. Up north of Buffalo Bay, in an area in Canada, there is a large area running, if I mistake not, from 8,000 to 10,000 acres which we have classified "open marsh or bog" and which is totally unfit for agricultural purposes. Probably a large portion of it anyway was never anything different, even if the Lake of the Woods was many feet lower than what it is to-day. If one goes to the south shore of the Lake of the Woods he will see there, at present, portions of the shore affected by water stage in the vicinity of Warroad, Zippel, and other places. Some of such areas, as far as possibilities are concerned, would not come into comparison with an area such as I have just mentioned in the vicinity of Buffalo Bay.

MR. POWELL. What do you mean by that; that this is better land than that at Buffalo Bay?

MR. WHITE. Yes; and I am trying to illustrate that when we ran across the testimony of early observers, giving us information which we did not have before, we had to reckon with that data; and the commission has had to reckon with it, and we feel confident that when such data is presented to interested parties they also will be as willing to reckon with it as we have been. Unless it were brought to the attention of interested parties, they, like ourselves, two years or so ago, would not know of its existence. I have qualified the presentation of the data to the extent of emphasizing the fact that this is not being presented to in any sense discredit any land that has intrinsic value on its own merits when those merits are separately determined.

MR. POWELL. Mr. White, we are not familiar with the *locus in quo* from observation. How does Dawson's description of the condition of affairs in the operation of the waters and the detritus on the ripa compare with what you observed to-day?

MR. WHITE. If we were giving a description to-day of certain physical phenomena which we see occurring on the lake, our verbiage would not be very far different from that of Mr. Dawson. In other words, there are occurring to-day on the lake conditions which he says were occurring in 1873. Just as we ran across information of

physical data, gauge heights, etc., which were a surprise to us, so in a somewhat corresponding way the results of our surveys, and the areas disclosed have been surprising. We expected to find more land flooded in the United States than in Canada. As a matter of fact, when you take the areas in Canada you find there is more land affected by these higher stages in Canada than there is in the United States, but in this connection you must not lose sight of the fact that in a single locality if there are 8,000 or 10,000 acres in Canada, as I have mentioned with respect to Buffalo Bay, that amount goes to swell the quantity of certain classifications of land in an undue proportion in Canada. As a matter of fact, the figures from our survey show 89,107 acres, of which 38,287 acres are in the United States and 50,820 acres in Canada.

Particular attention was given to ascertaining the areas of cultivated land. In recording the acreages representing such areas we have included all parcels of land which gave any evidence of ever having had the plow in them, even land that may have been wrested from tree growth and had been under plow for a time, but had been abandoned, and upon which a small brush growth 3 or 4 feet in height had sprung up, was still included under the classification of "cultivated land." While in the surveys we included certain areas here, and there, above the 1,064 contour, yet the 1,064 contour may for most purposes be regarded as the elevation representing the upper extent of our surveys. Below elevation 1,064 the total area of cultivated land found is 341.9 acres, of which 275.1 acres are in the United States, and 66.8 acres in Canada. If you come to elevation 1,062 the total acreage in both countries is 84.6, of which 72 acres are in the United States, and 12.6 acres in Canada.

Mr. TAWNEY. Is that agricultural land?

Mr. WHITE. The commissioner has just asked a question the answer to which should be clearly understood. There is a difference between agricultural land under the plow and land that may be brought under cultivation, and that distinction has been made in our tables. This is land which is actually under the plow or has been under the plow at some prior time. We have a classification called "grass land," and under this classification, speaking generally, is placed any land, cleared of both timber and medium or heavy brush, which affords evidence of having never been plowed. It includes certain small open areas on which true wild hay may be found, such as exists mainly along the upper reaches of some of the streams. Grass land, however, does not include land which, while cleared, was found to lie at an elevation low enough to permit the water to overflow it for periods sufficiently long to render the grass growth practically worthless for feeding purposes. Grass land, for the most part, lies adjacent to the shores of creeks or streams. The largest area of what we have classified as "grass land" exists in the vicinity of Warroad, and is found on sheets Nos. 9, 10, 14, and 16. Below elevation 1,064 of this classification there are 1,759.6 acres, of which 746.7 acres are in Canada, and 1,012.9 acres in the United States.

I will not take up time by reading the other details here but just give sufficient information to permit the audience to obtain some idea of the relative amounts of these different classifications.

Under the classification of "deciduous trees" are placed poplar, birch, elm, ash, and oak. This, approximately, is the order of the com-

bined extent and value of this group, of which poplar is the most prevalent. Of this classification below elevation 1,064 there are 8,360.5 acres, of which 4,800.2 acres are in the United States and 3,560.3 acres in Canada. Then we have the classification, "mixed deciduous and coniferous." Of course, the deciduous trees are those which shed their leaves every year, and the coniferous are the firs, the spruce, the balsam, etc. Where we found these growths mixed we had, below elevation 1,064, 2,570.3 acres, of which 404.8 acres are in the United States, and 2,165.5 acres in Canada.

In the classification "coniferous swamp" we have here quite a large percentage of the area covered by our survey. Such land has upon it the smaller growth of tamarack, spruce, balsam, or cedar. Generally speaking, the growths on these swamps, except in instances where poles, fence posts, and some railroad ties may profitably be marketed, are not commercially valuable. The total area of this classification, below elevation 1,064, is 13,955.7 acres, of which 8,528.5 acres are in Canada and 5,427.2 acres in the United States.

When you have an opportunity of looking over these tables you will find that when lower elevations are considered, as, for example, in the case of the coniferous swamp, below elevation 1,062, the quantities drop quite markedly. For example, below 1,062, the acreage is 3,747.2, as contrasted with 13,955.7 below 1,064.

We also have as a classification "Willows and brush." There is a good deal of this kind of material which is distinct from other growths and which had to be reckoned with. The total area of this classification below elevation 1,064 is 8,996.4 acres, of which 5,177.2 acres are in Canada and 3,819.2 acres in the United States.

Now it is well to notice that in land of this character there is not the marked difference as you come to lower elevations. Take, for example, elevation 1,062. You still have 8,071.8 acres as contrasted with 8,996.4 acres—that is, these willows and brush are practically the same at the lower elevations as they are at the higher.

We come next to the classification which has very considerable interest for many riparian owners. That is the classification of "Open marsh or bog."

The classification "Open marsh or bog" includes principally those areas, free of trees or brush, consisting of marshy or to a certain extent submerged lands lying along the lake shore between the outside line of trees or willows and the shore line—conventional or otherwise—as shown on our maps.

Areas classified under "Open marsh or bog" manifest different physical conditions at their outer or lakeward edge from what they do on their landward or inner edge. On the inner and higher portion of the "Open marsh or bog," as found during the survey, between about elevation 1,060 and the tree line, we have, generally speaking, the "Open marsh," the sod of which is anchored by roots to a comparatively firm subsoil. Between the 1,060 contour and the lake, however, the land gradually becomes softer and more spongy, so that between the 1,059 contour and the lake shore the greater portion usually becomes what may be styled "Floating bog"—the character of which is described below. Above the 1,060 contour the ground, with a few minor exceptions, is firm. Below the 1,059 contour it is safe to say that almost all the area is of the spongy or of the floating

type. In the expression "Open marsh or bog" the word "bog" really represents, as far as our classification is concerned, both spongy and floating bog.

The following brief statement will serve to illustrate the character of some of this "Open marsh or bog," and how it behaves under wave action.

When the water surface of a lake is raised some of the sod of the original ground surface becomes loosened, breaks away from the firmer soil beneath, and floats to the surface of the water. During the first few years this floating mass is probably not very tough or strong, but as time goes on and as the grass growth becomes heavier and its roots stronger and more firmly interwoven, the sod as a mass also becomes tougher and firmer. This surface mass may be 6 inches to a foot or more in thickness and varies greatly in toughness. At places a heavy man may walk over it, while in other parts a man even of light weight cannot walk without breaking through.

The bog is frequently underlaid by a soft black ooze or muck to a depth in places of as much as 6 feet. This muck may have a consistency varying all the way from muddy water to that of ordinary mud. In many places there is a subsoil of hard white or blue clay at a depth of from 2 to 5 feet, but frequently no marked subsoil is encountered even at a depth of 6 feet or more below the surface. It has been noticed, however, that the ooze or muck usually increases in firmness with depth, and at a depth of 6 feet a rod could not be pushed down farther into the muck without the exertion of considerable pressure.

One of the engineers engaged upon the work records that the same character of floating bog and black muck which he observed at places on the shore of the Lake of the Woods were found by him near Bemidji, Minn. At this place borings were made for a bridge foundation. It was found that not until a depth of 16 feet had been reached did the character of the muck change sufficiently to allow its being identified as sand. This means that in the particular locality of Bemidji there existed as much as 14 or 15 feet of blackish muck under the sod.

In places this ooze or muck works out into the lake, and is again washed in by wave action and covers up or washes out growth such as marsh grass or wire grass, which might otherwise get a foothold. Areas illustrative of the open marsh or bog which abound along the southerly shore may be found, for example, along the shore 2 miles either east or west from Mr. Landby's farm, which is located about 5 miles southeast of Warroad in section 1, township 162 north, range 36 west.

Processes of nature which have resulted in the formation of portions of the shores of the Lake of the Woods are, of course, similar to those which are found operating on many other bodies of water. Around the borders of many of the rock-bound lakes, such as are found in the rocky formations of northern Minnesota and northwestern Ontario, there are to be found numbers of large and small isolated areas of open marsh or floating bog. The process by which some portions of such shore have been formed may be suggestively mentioned:

By erosion of material adjacent to the inner portion of bays and coves there becomes deposited over such areas sufficient soil to enable a growth chiefly of aquatic vegetation to commence. After this growth has become established and as it approaches deeper water, such plants as the sphagnum moss continue to grow above and die from beneath with only partial decay. Such material as does decay settles in the water and eventually reposes upon the bottom of the lake or extends around portions of the lake as a floating fringe. When this raft of aquatic vegetation becomes sufficiently dense and firm, the sedges, small willows, and aquatic shrubs obtain a hold. At later periods on some of these areas the tamarack appears. It not infrequently happens that large areas of floating heathy bog break away and drift about the lake impelled by the wind. Numbers of instances are on record where large fields of marsh or swamp grass have broken loose and drifted so as to become a menace to bridges, dams, nets, etc., or to cause trouble in other ways.

There are many places along the south shore where the "Open marsh or bog" area between the 1,059 and 1,061 contours is more of the open-marsh and less of the floating-bog type. The growth over these open-marsh areas is usually sedge, rather than wire grass, because the latter grows to better advantage where the bog is floating.

Although there are some places where bulrush or cat-tail growths occur on floating bog, yet as a rule these growths are found springing from comparatively firm ground which may be covered by water up to a depth of 2 or more feet. These growths constitute a kind of transition link between water reeds proper, which may grow in 6 feet or more of water, and those plants which grow only on the drier ground.

The aquatic growths as they die may be found passing through various stages of transmutation toward the formation of peaty bogs. In the more northerly climates the breakdown and decomposition of vegetable fiber is usually a comparatively slow process. Numerous samples of such areas examined around the shores show that the Lake of the Woods in this respect is no exception. The growth on the "Floating bog" comprises "wire" grass and other marsh grasses, bulrushes, cat-tails, or cranberry bushes.

A good illustration of purely floating bog is found on sheet 8, where there is an area of some 1,800 acres lying between contours 1,059 and 1,061. The greater part of the "Open marsh or bog" in this vicinity, sheet 8, is of the floating type, extending inland even to the 1,064 contour. Conditions here would be changed but little even if the lake stage were dropped a few feet lower. The growth over this area is practically all wire grass.

In order to present some comparison of the relative amounts of floating bog and open marsh, it may be stated that for sheets Nos. 9 to 15 out of a total "Open marsh or bog" area of 7,425.5 acres about 30 per cent of the area is open marsh and about 70 per cent floating bog.

There are large areas, as for example on sheet No. 8 in the vicinity of Buffalo Bay, where up to about contour 1,061 it is probable that this part of "Open marsh or bog" area was never anything different in character from what it is to-day, and could in no sense whatever be regarded as land which might be brought under cultivation, even

if the level of the lake were lowered a few feet. On the other hand, however, if one considers portions of the "Open marsh or bog" to the south of Warroad, some of the shore land in this locality, other conditions being favorable, has been demonstrated by the growing of crops to be capable of cultivation.

In addition to the areas above described there are certain low areas with distinctive characteristics situated well back from the lake and known as "cranberry muskeg." The strata under such areas, although of much the same nature, are usually considerably firmer than those which exist beneath the floating bog. That is to say, there is manifested the firmer substratum of grass root, and then a shallow stratum of muck, which shades gradually into sand, or sometimes clay. Over these cranberry muskegs there is no pronounced grass growth. The surface consists of mossy hummocks, presenting a rough and uneven appearance. The moss may be, say, 6 to 12 inches in thickness, but just below it the surface roots and runners are so interwoven as to offer between the hummocks fairly good support.

Springing from this moss is a growth of small and scattered brush, usually from 2 feet to 4 feet or more in height. Sometimes there is a light growth of red willows, and frequently, also, areas of small, scattered tamarack or spruce; but the chief characteristic growth is the low cranberry bush, from which this class of muskeg derives its name.

Typical cranberry muskeg may be found on sheet 22, section 3, township 2, range 21 east, and on sheet 21 in the southern part of sections 11 and 12, township 2, range 21 east. It has all been classified as "Open marsh or bog." The total area of cranberry muskeg is probably under 1,000 acres.

Portions of the area classified as "Open marsh or bog" very probably owe some of their present characteristics to the fact that the level of the Lake of the Woods has during recent years been at higher stages for longer periods than was formerly the case.

The classification "Open marsh or bog" can not as a whole be regarded as consisting of areas suitable for agricultural purposes. However, it may be stated that in the course of our surveys some areas at about contour 1,061 were located where the conditions of drainage, mode of cultivation, etc., were favorable for the production of certain crops, and where crops had even been grown; but these areas are exceptional and can not in any sense be regarded as representative of the character of the great proportion of the areas comprised under the classification of "Open marsh or bog." Which of the various areas comprised within the classification "Open marsh or bog" possess agricultural properties would have to be specially ascertained, and one of the objects of this meeting is to hear from those who have such areas shown on the maps within the confines designated "Open marsh or bog." They will be able to represent to the commission what those areas are and where they are located, and then we can ascertain from the maps their extent.

Over 50 per cent of all lands classified as "Open marsh or bog" is included within the territory shown on sheets Nos. 6, 7, 8, 9, 11, 12, 15, 20, and 25. For representative examples, see sheets No. 8 and No. 11.

The total area under this classification of "Open marsh or bog" below elevation 1,064 is 28,941.9 acres, of which 10,413.1 acres are in the United States and 18,528.8 acres in Canada. The total area below elevation 1,062 is 26,501.7 acres, of which 10,380.7 acres are in the United States and 16,121 acres in Canada.

Other classifications which we have of sand, water, and rocks are almost self-explanatory, and as they occupy a place of but little importance in the considerations we need not take up your time with any reference to them.

One or two interesting features embraced within this quantity of 89,107 acres on the Lake of the Woods survey may be mentioned. Taking the sheets of the survey, which give only areas in the United States along the south shore of the Lake of the Woods, we find, in round numbers, that of about 26,500 acres there are some 13,000-odd acres of vacant Government land; that is, land that has not yet passed out of the possession of the Federal Government. There are about 5,000 acres of land which have been filed on, but which through noncompletion of requirements on the part of the person filing, have not yet passed out of the possession of the Government.

Mr. STEENERSON. Up to what year would that apply, Mr. White?

Mr. WHITE. That is up to about 1914; and these figures are only, at present, to be taken as roundly representative of the fact.

Mr. TAWNEY. Your statement is not clear as to whether that was the total acreage involved or the total acreage of a certain classification.

Mr. WHITE. This is the total acreage involved in the United States between 1064 contour and the present shore line.

Mr. TAWNEY. Of that 26,500 acres, how much was owned by the Federal Government?

Mr. WHITE. Approximately 50 per cent.

Mr. TAWNEY. In acreage, how much is it?

Mr. WHITE. 13,500 acres.

Mr. TAWNEY. Is the balance in private ownership or does the State of Minnesota own any?

Mr. WHITE. The State of Minnesota owns practically no land.

Mr. TAWNEY. So that the remainder of the 26,500 acres would be in private ownership.

Mr. WHITE. In round figures, the remainder could be split up into half of its "filed on" and a little more than half of it in private possession.

Now, here is an interesting fact to notice. From the time that the United States Government made its land surveys, it would appear as if about 4,600 acres of land of various classifications had been removed from the "old shore line." Of that amount about 2,880 acres would be United States Federal land, about 770 acres "incomplete," and about 950 acres of private ownership.

Mr. TAWNEY. What was the date of the public-land surveys?

Mr. WHITE. It is noted on the maps. In Canada, out of the fifty thousand, eight hundred-odd acres comprised within the survey about 12,500 acres are still in the possession of the Dominion Government as Indian reserve land and the balance is in the possession either of the Ontario Government, or private parties.

In connection with these figures which have just been given for the Federally owned lands, incomplete filed lands, etc., I would like to draw special attention to the fact that these figures have only been given as approximate and are subject to revision by Mr. Meyer, as he has had hardly an opportunity yet to look over them.

Mr. TAWNEY. If any gentlemen desire to ask Mr. White any questions, they will now have an opportunity to do so. If not, we will proceed with Mr. Meyer's statement.

TESTIMONY OF ADOLPH F. MEYER, OF ST. PAUL, MINN., CONSULTING ENGINEER, INTERNATIONAL JOINT COMMISSION.

(Adolph F. Meyer, having been duly sworn, made the following statement:)

Mr. MEYER. Mr. Chairman and gentlemen, Mr. White spoke briefly of some evidences that we have secured of stages that prevailed on the Lake of the Woods in the past and also what was occurring on the lake in about the year 1873, when Mr. Dawson visited this lake. He described the condition of the washing away of the swamps in a manner quite similar to what we see at the present time.

We have been able to secure certain records of early measurements at the outlets of the Lake of the Woods and have also had surveys made through the cooperation of the Manitoba hydrographic survey of the department of the interior of Canada. Surveys were made of the outlets of the Lake of the Woods from which, in connection with the records of water levels that we had on the lake, we were able to compute the levels that would have prevailed during the past twenty-odd years if there had been no controlling structures at the outlet of the lake. I will go into this matter rather briefly, because, first of all, it is a rather technical matter and somewhat difficult to explain, particularly to those who are not familiar with the working out of similar engineering problems, but by means of illustrations I will try to make clear to you approximately, even very approximately, the method pursued.

The engineers who are interested will be able to refer to our published report for a detailed explanation, a detailed engineering analysis, of the methods by which these computations were made and to satisfy themselves whether or not they represent substantially the facts.

In the first place, if you will think of the Lake of the Woods as a great big pool, a rocky rim along the northern shore, pierced here and there by narrow outlets, you will have some idea of the physical conditions with which we are called upon to deal in computing these natural levels. Imagine a box or a pool with a little narrow slit in it at the side and that you are pumping water into this pool. If this slit is narrow and of uniform width the water will rise very considerably in this pool or box as the rate of pumping into it changes. As you increase the rate of pumping into this lake the water surface will rise very considerably as the outflow increases and the outflow will not increase very rapidly. But imagine, on the other hand, that you have a wide box and that you increase the rate of pumping into that box. The rate of outflow will very suddenly and very rapidly

increase, so that you are not able to raise the level of water in that box very rapidly or very suddenly. Now, just imagine that the water running off from the tributary watershed represents this system of pumping into this lake and that leaves these narrow slits or wide openings represent the outlets of the Lake of the Woods. Narrow outlets, then, relatively narrow and small outlets, would give a large variation in lake levels. Large and wide outlets would give us a relatively small variation in lake levels and a large variation in outflow.

The surveys of the outlets show what the width of these various openings was in a state of nature. We have certain records of the amount of water that was flowing from the various outlets of that lake under conditions not in a state of nature, but from which we were able to deduce a curve known as a rating curve, which represents the amount of water in cubic feet per second or the rate at which the water would flow from this lake for various stages in the lake.

If the bottom of this opening is at a certain elevation, we know that this box can not drain down to a lower elevation than the bottom of the opening, if there were even no water flowing from this opening whatever. So we have some lower elevation below which the lake could not fall. More than that, we know accurately the amount of water that flowed into this lake during the past 21 years. The records that at first seemed hopelessly confusing have lent themselves to analysis, so that it was possible to determine substantially what was the amount of water that flowed into this lake during years past. Without going into the details as to how this rating curve was constructed, I will say again that we believe there is ample evidence in the data which we published to substantiate our conclusions as to what was the rate of outflow for various lake levels under natural conditions before the dams were built in the outlets of the lake.

Having now that relation between lake level and rate of outflow, and knowing the amount of water that came from this tributary watershed during the past twenty-odd years, we are able to compute what the levels would have been in a state of nature. First of all, going back to my homely illustration of that box, if the rate at which I am pumping water into the box is exactly equal to the rate at which the water is flowing from the box, there will be no change in level. I can keep on pumping as long as I like, and if the rate of inflow and the rate of outflow are equal, there can be no change in level. If the rate of inflow becomes greater than the rate of outflow, there will be a rise in level. If the rate of outflow is greater than the rate of inflow, there will be a fall in level. On that basis, and again without going into the technical matters, we have constructed curves from which we have computed the levels that would have prevailed on the lake these past twenty-odd years.

Mr. TAWNEY. Do your computations take evaporation into consideration?

Mr. MEYER. Our computations take into consideration evaporation in this way: We have the record of the actual change in the level of the lake and of the outflow from the lake. Then, if during any given period the lake rises one-tenth of a foot, say, in 10 days, that represents a certain volume of water. If during those 10 days a certain quantity flowed out, the two things together represent the net quantity that flowed into that lake, evaporation being auto-

matically taken care of, being deducted by this net rise. That rise occurred in spite of evaporation. Therefore we have the net inflow.

I will just run along briefly and indicate what our computations show as to the difference between the levels which were actually observed as prevailing on the Lake of the Woods during the past 21 years and those levels which, according to our computations, would have prevailed if there had been no control exercised at the outlets.

Perhaps you would say, But how are you going to start? How do you know what the level was at the beginning of any one period, and, not knowing that level, how can you compute the level that would have prevailed at any time thereafter? On plate 113 of our report, referring to the volume of plates, we have assumed that certain levels prevailed under natural conditions on the 1st of October, 1892, as follows: First, we have assumed that the level prevailing at that time was a natural level of approximately 1,060.8.

We have then assumed that the natural level prevailing on the 1st October, 1892, was only 1,057. We have further assumed that the level was 1,059.5. (Pl. 113.)

Now, to go back to my illustration of that box once more (Pl. 113), suppose, now, that I assume that this box for our lake is at a higher level than it actually is. Then I go to my curve, which shows the rate at which the water would flow from this box, or this lake, for that assumed lake level. That curve will give me a larger rate of outflow than the actual rate of outflow, the inflow being a constant known fixed quantity. The surface of that box, or the water level in this box or lake, will drop, because the rate of outflow assumed is larger than the actual rate of outflow, and it will keep on dropping until an equilibrium is established. If I assume a level which is too low, the rate of inflow will cause that lake to rise until equilibrium is established, because the rate of outflow was larger than the rate of outflow corresponding to the lower level which I have assumed. Now, in that way we have worked out the levels that would have prevailed during the years 1892 and 1893, as shown on plate 113, and we find that in September, 1893, the results given under those three assumptions are substantially the same—that is, all differences as to assumption of lake level at the beginning of the period are eliminated in the course of about one year. Going back, then, we find that the mean line—1,059½ on October 1, 1892—seems to give you approximately correct results, even from the beginning of the period—that is, the upper line comes down to meet the central one and the lower line comes up to meet it. That central line, or that assumption of 1,059.5, prevailing on October 1, 1892, as the natural level is substantially correct. But we have dropped out of consideration the first few months; and in the following pages, plate 114 and following, we have shown only the actual level as observed and the level which we computed would have prevailed under natural conditions without controlling works at the outlets. You will note that at the beginning of 1893, with the old rollerway constructed in 1887 in place—at least, the greater portion of it in place, part of it having been previously removed, according to records that we have every reason to believe are thoroughly reliable, given by Mr. James C. Kennedy—

Mr. TAWNEY. The rollerway is the name of a dam?

Mr. MEYER. Yes; the old rollerway dam.

Mr. KEEFER. The Norman Dam?

Mr. MEYER. Not the Norman Dam. I am referring to the first dam, in the western outlet of the Lake of the Woods.

Mr. KEEFER. At Norman?

Mr. MEYER. At Norman. During the years 1894 and 1895 the Norman Dam was built farther down on that same outlet, but during the year 1892 only the rollerway dam was in place; and you will note that during these succeeding years—1893, 1894, 1895, 1896, and 1897—a difference between the computed natural level and the actual observed level of from 1 to 2 feet. If you turn to plate 117 you will find a different type, so to say, of variation in lake level, resulting from the placing of stop logs in the Norman Dam in the fall of the year 1898. Previous to that the two lines of actual level and computed natural level ran along, not quite parallel but nearly parallel, varying from 1 to 2 feet, and indicating similar variations; in other words, this structure at the outlet of the lake simply changed the river bottom; no varying control was being exercised. The lake would rise and fall in a similar way to the way in which it rose and fell under natural conditions, with the level varying from 1 to 2 feet greater in elevation. In the fall of 1898, however, where, under natural conditions and also under the condition of the rollerway dam in place, and no control exercised at the Norman Dam, the actual level would again have fallen if it had not been for the placing of the stop logs in the fall of that year, you notice that in November and December the actual observed level continues to rise until the latter portion of December, whereas the computed natural level gradually falls. During the year 1899 you also notice very irregular variations between the actual level and the computed natural level, the difference having become greater since the Norman Dam began to control the outflow further than the old rollerway dam, the old rollerway dam having been substantially removed.

Portions of it still remain as débris, scattered over the river bed. During the year 1900 you will note that the greatest difference between the actual level and the computed natural level occurs in August. The computed natural level would have been about 1,055, whereas the actual observed level was about 1,058.8, or a difference of 3.8 feet. As you turn over the pages, you will note a considerably varying difference between the actual controlled level and the computed natural level, on the whole, increasing somewhat during the succeeding years, 1905, 1906, 1907, 1908, and 1909, beginning to run over 4 feet at times. In the spring of 1910, for example, you notice a difference of nearly 5 feet between the computed natural level and the actual observed level. Running along from 1912 and 1913 you will note that in the spring of 1913 there is the greatest difference between the computed natural level and the actual observed level, representing something like 6 feet to $6\frac{1}{2}$ feet. This information is summarized in plate 125—following, the plate giving the records for 1912 and 1913—in what we term a frequency curve, or duration curve. You will note there two curves, the upper one showing the actual observed level, and the lower one of the upper half of that plate representing the computed natural level. You will note that

the highest level which was actually observed on the lake during that period was about 1,062.3. The highest level which, according to our computation, would have prevailed if the outlets had remained in a natural condition, would have been substantially 1,061. You will also note that about half the time the actual level was above 1,060 and about half the time it was below 1,060. You will note, further, that the computed natural level for about half the time was about 1,056.8 and about half the time below that figure; that the lowest level reached during that period, according to observations, was 1,056.7, and the lowest level which, according to our computations, would have prevailed in a state of nature is a little less than 1,053.

Now, those computations cover the period from 1893 to 1913, inclusive. In an earlier chapter in our report, and in one of the earlier graphs, being that on plate 11, we represent the average annual precipitation over the three principal watershed subdivisions, namely, that portion of the watershed tributary to the Rainy River above International Falls and Fort Frances; that portion between the Falls and Fort Frances and the mouth of the Rainy River, designated as the lower Rainy watershed, and that portion directly tributary to the Lake of the Woods itself, known as the watershed of the Lake of the Woods proper; the entire watershed of the Lake of the Woods comprising about 26,750 square miles, and that above International Falls and Fort Frances, comprising an area of 14,500 square miles. Referring to those graphs, you will note that during the years 1885, 1886, 1887, and 1888 (pl. 11), the rainfall on the upper Rainy watershed was considerably below the average for the entire period from 1885 to 1913. On the lower Rainy watershed you will note that it was below normal from before 1885 to and including 1889, similarly for the watershed of the Lake of the Woods proper. You will note that there was no succeeding dry spell equal to the dry spell that prevailed from 1885 to 1889, covering the period of observation from 1885 to 1913. Not even excepting the year 1910, which, while it stood alone as giving a lower rainfall on the upper Rainy watershed and on the lower Rainy watershed, it did not give the least precipitation during that period on the watershed of the Lake of the Woods proper, and it stood as only one year of extremely low precipitation, whereas during the beginning of this period there were the years from 1885 to 1889, which, without exception, had a precipitation below normal. Consequently it stands to reason that so far as the recollection of those who have been round the Lake of the Woods during those years is concerned, that the level of the Lake of the Woods under natural conditions might very well fall lower than it had been during any of the 21 years from 1893 to 1913 or 1914, inclusive.

Perhaps, Mr. Chairman, that is sufficient for the presentation of that phase of the subject, and if there are any questions put to me I will be glad to answer them.

Mr. MAGRATH. Dealing with plate 125, what would be the range of level under natural conditions?

Mr. KEEFER. What period are you referring to?

Mr. MAGRATH. 1893 to 1913.

Mr. MEYER. According to plate 125, there would have been a range of level under natural conditions of practically 8 feet, whereas

the range that actually was observed was about five and a half feet, or between five and a half feet and 6 feet. The data in our report will give you all of those figures accurately and exactly. I am stating them within one or two tenths, but you note that there would have been a considerably greater variation in lake level under a condition of nature than actually was observed to have prevailed during that same period of years under the condition of control——

Mr. TAWNEY. What do you say as to the frequency of variation in a state of nature as compared with the frequency of variation under controlled conditions?

Mr. MEYER. May I hold that question over just a moment till I finish this statement?

Mr. TAWNEY. Yes.

Mr. MEYER. So that, in a general way, these computations bear out the testimony of those who came upon this lake during the earlier years and reported variations of about 10 feet in level between low and high water. You will note that I said that our computations did not cover the extreme low-water period. You will also note that they did not cover the extreme high-water period. There are unmistakable and unquestionable evidences of there having been higher levels in a state of nature, as indicated by the marks noted on that lake by Kennedy in 1894.

Mr. KEEFER. What are those indications?

Mr. MEYER. The lichen marks on the Lake of the Woods, constituting high-water marks, are simply the margin to which this vegetation, known as lichens, grows on the rocks. You have those marks not only on the Lake of the Woods, but on all the upper lakes. We have personally gone over all the boundary waters from the divide down to the Winnipeg River and have made observations of these watermarks. We have noted several watermarks on most of the lakes, representing stages, which recur with different frequency, and which prevailed presumably for different periods of time. Where a lake came up for just a short time, perhaps after 50 or 75 years, we would be unable to say within what limit of time a more or less indistinct mark was made; that is, lichens of only one species in particular were removed. Where the water stood for a longer period of time, other species of lichen were removed. We have found on all of those upper lakes that were still in their natural condition large trees growing 3 or 4 or 5 feet below the extreme high-water marks, particularly on those lakes in which there was a very large fluctuation in level, such as Lac la Croix. The extreme high-water mark on the lake was about 8 feet and 5 inches above the water surface in the year 1914 when we made our examination. We have pictures in our report indicating large trees growing at an elevation of 5 feet above the water surface; that is, the ground came up to the roots at an elevation of about 5 feet above the water surface, and at about that same elevation there was another well-defined watermark. We have noted that where there is current the lichen are removed more rapidly than where there is quiet, standing water. We have noted that apparently wave action producing current has a tendency to remove the lichen.

Taking all of these facts into consideration, and with all due allowance, we have reached the conclusion that some time in a state of

nature, some time during the past 50 or 75 years, or perhaps even earlier than that, the Lake of the Woods did reach a level of about 1,062.5.

Mr. POWELL. How does that compare with the present level?

Mr. MEYER. The actual highest observed level during the periods over which our records extend was practically 1,062.3. At the same time you will note that the highest level which, according to our computations, would have prevailed during the last 21 years would be 1,061, if there had been no control at the outlet.

Mr. TAWNEY. I was curious to know whether there was as much frequency in variation under natural conditions or more frequency of variation in levels than under controlled conditions.

Mr. MEYER. Under natural conditions the lake came up during the summer in a relatively regular way, stood for a while at its high point, and dropped off again in the fall. In one year, 1900, and extending into 1901, the lake reached its highest during the winter, and would, under natural conditions, on account of the excessive rainfall in the lake, have reached its highest at that same time of the year; but with that exception the high level under natural conditions would have been reached during the summer months. The curves to which I have referred indicate that even after control commenced at the outlets the variation did not differ very radically from that which would have occurred under natural conditions, for one reason, that the control exercised at the outlets was not as complete as it might have been—that is, the changes were not made very suddenly, and the changes made were not so large as to cause a very much greater fluctuation in outflow than would have occurred under natural conditions. I am not sure that that answers the question.

Mr. TAWNEY. Yes; that answers my question.

Mr. MEYER. Are there any further questions?

Mr. ANDERSON. I assume we will be given an opportunity at a later stage if we want to ask Mr. White or Mr. Meyer any questions.

Mr. TAWNEY. Certainly; they will be here at the service of those who are present, and will be ready to answer any questions, either publicly or privately.

Mr. ANDERSON. The information has come to us now, and it would hardly be expected that we should go at any length into the matter at present.

Mr. TAWNEY. The rollerway dam was a submerged dam; there was no control exercised?

Mr. MEYER. No varying control. The water flowed over the top of it, instead of flowing between piers, as it does in the other dam.

Mr. STEENERSON. Was it 1,062.5 that you gave a few minutes ago?

Mr. MEYER. That was the highest level, allowing a small amount for the wash that occurs even in comparatively quiet waters near the outlets, where the bays are sheltered by islands. On exposed locations, such as Flag Island Point and Buckete Island, where it was open to the sweep of the wave, it was up to 1,062.7 and 1,062.9, but that would not represent, according to the best observations, the actual water level.

Mr. STEENERSON. I asked if it was 1,062.5 that you mentioned in the statement.

Mr. MEYER. Yes; as the highest, according to our conclusions, that had prevailed at some time in the past.

Mr. STEENERSON. And the present observed level was 1,062.3?

Mr. MEYER. That is the highest present observed level during the past few years.

Mr. STEENERSON. When was the highest observed level?

Mr. MEYER. That same figure was reached several times.

Mr. STEENERSON. Can you give the date?

Mr. MEYER. I can not give it offhand. Mr. White tells me it was 1900, but it has reached 1,062, I believe, according to the records, even this summer. Although that was the highest observed level, I believe it came very close to that at one previous time. In 1897 it was 1,062.2.

Mr. STEENERSON. And in 1915?

Mr. MEYER. In 1915, according to the record given us yesterday, it was practically 1,062. Those records will be available, so that the actual elevation as taken by the gauge reader can be determined to the hundredth according to the gauge zero that we are using in reducing the local elevation to sea-level datum.

Mr. ROCKWOOD. I should like to know what the crest of the dam was.

Mr. MEYER. There is no elevation which can be stated as being the crest of the dam, because there are piers and sluices in which stop logs are placed to a varying elevation, depending upon the amount of water which it is desired to release through the dam. The top of the piers is at an elevation of 1,064, practically. There is a variation of a few tenths in the elevation of those piers.

Mr. ROCKWOOD. I should like to know whether this report contains information as to the difference in level between the water above the dam and the water immediately below the dam.

Mr. MEYER. Yes; our report gives the full record of the elevation of the water below the dam, and also above the dam and in the lake.

Mr. ROCKWOOD. Can you refer to the page?

Mr. MEYER. Yes. Table 7 of the blue-colored volume gives the levels. In the graphs we have also presented all of the available records of lake levels and tail water levels, graphically, and have also shown a line of mean lake level and a line of mean observed tail water level, indicating our conclusion, with all the local variations eliminated, as to what was the true level of the lake during those years and the true tail water level at Keewatin during that same period of years. The observed lake levels are given on plates 39 to 49, inclusive.

Mr. TAWNEY. In what volume?

Mr. MEYER. In the volume of plates, and the observed tail water levels are given on plates 51 to 65, inclusive, in the same volume. The tabular material relating to this information is substantially all summarized in one volume, being the blue-colored volume of tables. The graphical report of the same data and the study and analyses of the data are presented in the brown volume of plates. In addition to that there is in preparation a volume of text, of which we have only galley proofs here, not for distribution. There are only a few copies available, just in time for the present hearing. They will be completed as soon as possible.

Mr. TAWNEY. The text is not yet completed?

Mr. MEYER. It is not quite completed.

Mr. TAWNEY. In addition to that, will you describe what maps you have?

Mr. MEYER. The maps to which Mr. White referred have been published for about two months, roundly speaking, I believe, constituting the Lake of the Woods, sheets Nos. 1 to 20. There are five additional Lake of the Woods sheets to be published in the near future. In addition to that, four Rainy Lake sheets have been published and maps of the lowlands bordering the lake above Kettle Falls will be published in a very short while and will be available for distribution.

Mr. TAWNEY. What territory is included in the five maps that are not yet completed?

Mr. MEYER. Shoal Lake and part of Big Island; 22 and 21 are part of Big Island. I understand 21 and 22 are going through the press. All of the remaining sheets cover Canadian areas round the Lake of the Woods.

Mr. TAWNEY. In addition to that, have you a large map covering the entire area of the Lake of the Woods, and drainage of the lake and its tributary waters?

Mr. MEYER. Yes; in addition to that, we have a complete map of the entire watershed, of 26,750 square miles, covering all of the lakes and streams of that area, based on all the best available information, including our own surveys and those of the recent International Boundary Commission, not yet published.

Mr. TAWNEY. Is that map completed and printed yet?

Mr. MEYER. The best information we can get is that it will be a few days before it will be actually available for distribution. Color proofs have been made and corrections are being made at the present time.

Mr. ANDERSON. You gave the date of the construction of the new dam as 1893.

Mr. MEYER. I do not think so.

Mr. ANDERSON. What date?

Mr. MEYER. I think I said 1894 and 1895.

Mr. ANDERSON. The reason I asked was that I thought you said 1893.

Mr. MEYER. Our computations were in 1893. The second dam was under construction during 1894, and the question was whether the dam was really complete until the stop logs were placed there, which was in the fall of 1898; so that virtually you can consider the dam under construction from 1894 to 1898.

Mr. ANDERSON. It would have a different effect upon the water during that period to what it would afterwards?

Mr. MEYER. Yes.

Mr. POWELL. I would like to ask two questions. Explain what you mean when you speak about the watermarks. Do you mean that series of horizontal colors on the face of the rock visible on the northern portions of the lake?

Mr. MEYER. These water marks have been variously referred to—

Mr. POWELL. First, where do you find them?

Mr. MEYER. We find them on the rocks on the shores of the lakes.

Mr. POWELL. Are they plainly visible at a distance?

Mr. MEYER. Plainly visible on most of the lakes at a very considerable distance.

Mr. POWELL. Are the lines all clear and distinct?

Mr. MEYER. They are particularly distinct at a distance, but become a little less well defined when you approach within a matter of 5 or 10 feet of the marks.

Mr. POWELL. Do these marks of delimitation indicate that the waters had been at the particular level for any length of time?

Mr. MEYER. There is nothing whatever, so far as I am personally concerned, in the marks themselves, that would enable me to tell whether the water stood at that stage for any particular length of time. We know, however, that the lichens that constitute these marks are very slow in growing. Lichenologists are on record to that effect. Our observations indicate the same thing. We have noted on the rocks round the lake, where some of the adventurous visitors have marked their initials, with the date of their visit, on the lichen-covered rocks and they are as visible there as at the time they were made. Unfortunately, none of them extends back as far as we would like.

The one in particular which I recall was made in 1910, and appears just as distinct as the day it was made. We have further records of correspondence—I believe it was personal correspondence—with these gentlemen who referred to the firing of caps. We have further records of large caps being fired off on the rocks on the Potomac River on which lichens were growing during the year—I do not recall the exact date. These are matters that are all going into the text of the report. It was about 1905; that is 10 years ago, and the marks are as distinct to-day as after that Fourth of July celebration. We also know that those lichens can not be submerged in water for any length of time, particularly in flowing water, before they are removed. In the case of those lichens that have a rather profuse growth and that are tied down by little bits of stems to the rock stratum, the current will remove the lichen growth very much more rapidly than in the case of those small, close-growing lichen that are not so much exposed to wave action and currents. For example, on the rocks at Old Fort Island, just below the outlets of the lake, where there is swift current in high water, the lichens were removed completely up to the elevation of the highest marks found in that vicinity; whereas just a short distance up river, in comparatively quiet water, the coarse lichens only were removed to a stage about a foot and a half lower, which either prevailed for a longer time or more frequently.

Mr. POWELL. In this case I suppose the current action would be entirely absent, and the washing away of the lichens would be the result of wave action.

Mr. MEYER. After they were killed they would drop off the rock in quiet water.

Mr. POWELL. In this case there is no current, and the change would be due to wave action.

Mr. MEYER. I believe they would drop off without any action whatever after they were dead, although we have found in some very sheltered places lichens still clinging to the rock to some extent, even though they have been in the water for apparently some considerable time. They are removed much more rapidly when the water is in motion.

Mr. POWELL. I have another question. Necessarily there would be a general movement of the water from the mouth of the river toward the discharge point at Kenora. The result of that would be a higher level at the mouth of the Rainy River than at the dams at Kenora?

Mr. MEYER. Not appreciably higher. It would be of no appreciable consequence.

Mr. POWELL. Supposing there is a discharge at one end?

Mr. MEYER. It would not affect it. The hydrostatic pressure is transmitted very quickly.

Mr. POWELL. You think there would be practically no change?

Mr. MEYER. No practical difference in levels between the two sides of the lake, except as represented by the small fall through the narrow channel at the Devils Gap.

Mr. POWELL. How does that point indicated by these marks and record compare with the level of the lake to-day? Is it above the lake to-day?

Mr. MEYER. The level to-day is practically 1,060.6.

Mr. KEEFER. Do you mean this actual day?

Mr. MEYER. To-day.

Mr. POWELL. So that the result of your judgment is that at that particular time the water was somewhere near 2 feet higher then than it is to-day?

Mr. MEYER. Yes.

Mr. STEENERSON. Have you taken the levels of the water in Rainy River above the outlet into the Lake of the Woods?

Mr. MEYER. We have records, so far as they are available, of water levels in Rainy Lake and Rainy River.

Mr. STEENERSON. Speaking generally, how is the level of the water in that stream, as far as the Sault Rapids are affected by the level of the Lake of the Woods?

Mr. MEYER. The water level below the Long Sault Rapids rises and falls with the level of the Lake of the Woods, with comparatively little difference, as shown by the records of the past few years.

Mr. STEENERSON. How much higher is the surface of the river at that point than at the mouth?

Mr. MEYER. It is in our report, but I am unable to answer.

Mr. STEENERSON. There is a fall from the Sault to the Lake?

Mr. MEYER. Very little fall.

Mr. STEENERSON. There is a fall?

Mr. MEYER. But it is so wide and deep and the quantity flowing into it for that width and depth is so small, relatively speaking, that the fall is very small.

Mr. STEENERSON. Could you give us the exact figures?

Mr. MEYER. I could in a very few moments. Assuming the levels that have been carried along the river were absolutely correct, which, for that distance, is impossible, but nevertheless for practical purposes can be assumed as being the case, there would be almost exactly 1 foot fall on June 12, 1914, from the foot of Long Sault Rapids to the Lake of the Woods—1 foot fall in that entire distance.

Mr. MAGRATH. What is the distance?

Mr. MEYER. Forty miles, plus or minus the variation of 1 foot.

Mr. STEENERSON. How far does that go up the river?

Mr. MEYER. The rapids extend over nearly a mile.

Mr. STEENERSON. What is the fall in the rapids?

Mr. MEYER. The fall varies. The water surface on June 14, 1914, at the gauge above the main portion of Long Sault Rapids was 455.6, public-works data. The water surface on the gauge below the Rapids on the same date was 451.2, making a fall of 4.4 feet through the main portion of the Rapids.

Mr. TAWNEY. Does that represent the total fall?

Mr. MEYER. The fall continues for a little distance above. It will be a matter of a few tenths additional fall a short distance above, and then it continues at a somewhat greater slope for a thousand or two thousand feet more.

Mr. STEENERSON. Have you anything to show how that surface in that fall is affected by the gauge of the water below in the river? You have stated that the water below the Sault Rapids would rise to correspond with the rise of the lake level. Is that correct?

Mr. MEYER. Yes; and in addition to that, of course, it also varies with the amount of water flowing in the river.

Mr. STEENERSON. It rises, corresponding with the rise in the lake level?

Mr. MEYER. Practically so.

Mr. STEENERSON. How does that rise in the level of the lake below the Sault Rapids affect the level of the river through Sault Rapids?

Mr. MEYER. The higher the water surface below, the higher the water surface would be above, but the rise above would be very much less than the rise below.

Mr. STEENERSON. How do you account for that? Is it the velocity of the water?

Mr. MEYER. When you have a slope in the stream and a good amount of water flowing down, you have a certain amount of velocity. If you raise the water below, you increase your area of cross-section, which decreases the velocity and flattens the slope, and that principle extended up through the rapids would explain the reduction in rise above the rapids over what occurs below the rapids.

Mr. ANDERSON. Coming back to that watermark for just one moment; you have observed conditions upon the Lake of the Woods, you have made a careful observation of them. Could you give any more definite information than you have already done as to the time which it would require to create visible watermarks upon the rocks?

Mr. MEYER. That is a subject on which, so far as the opinion of lichenologists goes, there is no information. I presume that those who have been round the lakes for years might know something about it. Perhaps there are some men here to-day who have made more extensive investigations than we have, as to the length of time required to form a mark. As I indicated a while ago, that depends upon the character of the lichens, and upon the fact whether there is current or not adjacent to the bank on which that lichen growth occurs. But compared with the time required for the lichen marks to change, the time required for their formation is very short.

Mr. MIGNAULT. Would the color of the rocks not be affected by the water level independently of any lichens?

Mr. MEYER. There are certain marks, quite temporary in character, visible on lakes that have recently been held for some time at

stages where the rocks were clear of lichens, and on those rocks, as indicated on some of the pictures shown in the text of the report, there are white stripes, not very sharply defined, but, nevertheless, quite clearly visible, indicating a bleaching effect of the water. That bleach is also shown on piling of bridges and on trees.

Mr. MIGNAULT. You can see it on the bridge here.

Mr. MEYER. You can; but that highest mark would, of course, be completely wiped out if the lake came up above the point where that bleach was formed, and also that bleach, if resulting from a stage which prevailed a relatively short time, would not be very permanent.

Mr. MIGNAULT. But where you see a mark of that nature to-day, and you have seen it a year ago, you would conclude the water has not risen up to that point between the two dates when you have observed that mark?

Mr. MEYER. The water may have been up to that point any number of times. If it exceeded it, it would be changed. It might increase it if it stayed a long time. There might be a well-defined bleach up to a certain elevation and a less well-defined bleach to a lower elevation.

Mr. WYVELL. It would be impossible to state at what date in the past the highest level was attained. It was more than 21 years ago, and you have no idea, in estimating the date, whether it was 1830 or 1700, because, whether it was 100 or 150 or 50 years, you are unable to state.

Mr. MEYER. I would not attempt to make any definite statement, except that I would say that the lichens grow down gradually and slowly; that marks were found by Kennedy in 1894 at the then existing water level, and if those dated back several hundred years, for example, in reply to your question, they would not be the marks that were formed at the time the water stood at that particular stage; that is, the water may have been up 6 inches higher. The lichens may have grown down 6 inches in those years. The lichens spread but very slowly.

Mr. WYVELL. You will not attempt to give the date when the 1,062.5 was obtained?

Mr. MEYER. I would not.

Mr. LANDBY. I would like you to explain one thing. In 1899 and 1900 I was clearing on my field below the line of 1,062, and I piled up heaps of stuff, composed of cedar and hemlock stumps, many of them that big—2 feet; and as far as I can understand, those trees were burned down in the year of the Chicago fire, 40 or 50 years ago, and I considered those trees would have taken probably 75 to 100 years to grow, and I would ask you if you think such things could grow under the conditions which existed, at 1,062 and below?

Mr. MEYER. I would say that the lake has been up to a stage of 1,061, or above, which would clearly prevent the growth of trees of the character described by Mr. Landby.

Mr. LANDBY. Tamaracs and cedars; the trunk would be about 2 feet wide.

Mr. MEYER. I would qualify my previous reply by saying that in the case of tamarac and cedar, which are known to grow in very wet soil, I would not care to make any definite statement indicating that

they could not grow under the past conditions. In the case of upland trees—which was the impression I had—I would say unqualifiedly that they can not grow at that elevation—that is above 1,061—at the stages that have prevailed during the past 10 or 15 years, but I am not so ready to make any statement with respect to tamaracs and cedars, because I am not so familiar with the growth of those trees, under the conditions of excess moisture.

Mr. TAWNEY. I observe Congressman Steenerson, who represents the people of his congressional district, who are interested in this investigation, has entered his appearance. I understand there are two counties bordering on the south shore of the Lake of the Woods, in Mr. Lindbergh's district. Is he present, or is there anyone present to represent the people of his district who are interested in this investigation? If there is anyone here, we would like to have his appearance entered, so that it would appear as a matter of record.

Mr. C. E. BERKMAN. He has been requested by some citizens to be present, but he could not be here. I appear for some of the interests in Mr. Lindbergh's district.

Mr. TAWNEY. Is there anyone representing the town of Warroad? There was a representative here.

Mr. STEENERSON. I presume they will be here.

Mr. KEEFER. I desired to say, as representing the Province of Ontario, which is very largely affected by this report, especially in the quantity of acreage, I think I can well congratulate and compliment you on the type of gentlemen that you have chosen as the consulting advisers, and on the manner in which they have done their work, and the method and simplicity with which they have given us a report. I was impressed, as they proceeded with their explanations, with the weight and volume of what they had to do.

Mr. TAWNEY. We appreciate your recommendation very much. There is an engineer from our own State, Mr. Willard—one of the engineers of the State of Minnesota. I would like to ask if he has anything to offer along the line of the report which has been presented to the commission this morning before we adjourn.

Mr. E. D. WILLARD (State drainage engineer). I saw a copy of the report last night and took a few moments to look it over, and I can not commend the engineers who prepared the report any too highly. It is really the only authentic piece of work that has been performed bearing on the subject of the water levels of the Lake of the Woods. We have heard much about it, and have probably read very much about it, but it has been all hearsay; there have been no facts presented, and this report is surely a report presenting the facts as they exist to-day, and if the problem can not be solved from this report satisfactorily, I do not see how it can be solved, because the report presents everything that can be presented.

(The commission adjourned at 12.50 p. m. until 2 p. m.)

AFTER RECESS.

The commission reassembled at the expiration of the recess, all the members being present, as also the parties heretofore mentioned.

Mr. TAWNEY. If there are no further questions that gentlemen desire to ask the consulting engineers, we will proceed to hear the

testimony in regard to the value of the lands that are involved. I would say for the information of counsel that we have maps here showing the lands that would be affected at any given level between 1,064 and 1,056. These maps are available for the use of the gentlemen present.

Mr. STEENERSON. The commission will no doubt appreciate that these farmers are not prepared to go on with the evidence in that order. We have not arranged our evidence as to townships and do not see that it is of very great significance whether it is one township or another. Some have been impoverished and have left the country and we can not produce them.

Mr. TAWNEY. What procedure would you suggest that would be satisfactory to the people?

Mr. STEENERSON. It would take some time to arrange the witnesses in groups by townships, and we have not got them all. It would be all right if they had employed lawyers and engineers.

Mr. GLENN. Just as soon as you put your man up we can turn to the proper map.

Mr. STEENERSON. Yes, sir.

Mr. TAWNEY. I want to call attention to a request that was made this morning by Mr. Wyvell, that we hear Maj. Peek at this time in regard to the harbor interests. It was the intention of the commission to proceed first with the agricultural interests and then take up the harbor, navigation, and fishing interests. It is not material to me in what order we take the testimony, but I have been informed that there are a number of farmers here that want to get away, and if that is so, and they want the preference, we will give them the preference.

Mr. WYVELL. Maj. Peek's testimony will be very brief. I would not interrupt the plans of the commission, but to hear his testimony now would enable him to get away to-morrow.

Mr. STEENERSON. On behalf of the farmers, I would say that they are perfectly willing to have that arrangement carried out.

Mr. TAWNEY. If it is satisfactory to the farmers who are present we will take Maj. Peek's testimony at this point, and we can defer the taking of further testimony in regard to the harbor interests until the agricultural interests have been heard.

TESTIMONY OF MAJ. ERNEST D. PEEK, CORPS OF ENGINEERS, UNITED STATES ARMY.

(Maj. Ernest D. Peek, having been duly sworn, testified as follows:)

Mr. WYVELL. Please give your present employment.

Maj. PEEK. Maj. Ernest D. Peek, Corps of Engineers, United States Army, district officer in charge of the Duluth (Minn.) district, and the St. Paul district.

Mr. WYVELL. You have been connected with the Army how long?

Maj. PEEK. Since 1897.

Mr. WYVELL. You are a graduate of West Point?

Maj. PEEK. Yes, sir.

Mr. WYVELL. You have charge of the district embracing Warroad, have you not?

Maj. PEEK. I have.

Mr. WYVELL. Please state when the improvements at Warroad Harbor began.

Maj. PEEK. The first item inserted in the river and harbor bill was that of March 3, 1899. The actual construction work, however, did not begin until after the appropriation of June 13, 1902. From that date to the present time work has been in progress continually.

Mr. WYVELL. Please state what has been done since 1902.

Maj. PEEK. The project for Warroad Harbor provides for a turning basin directly in front of the town, about 900 by 500 feet; then a channel leading to the lake approximately 1 mile in length and 200 feet wide; then a channel into the lake 200 feet wide; all to be at a depth of 8 feet at low water.

Mr. WYVELL. This work has all been done, has it not?

Maj. PEEK. It is practically all completed except the maintenance.

Mr. WYVELL. At what cost has this work been constructed?

Maj. PEEK. There has been expended to date approximately \$116,000.

Mr. WYVELL. Now, Maj. Peek, at how low a level can the lake be maintained and at the same time there be permitted a complete and efficient use of Warroad Harbor?

Maj. PEEK. At an elevation of not less than 1,057.6.

Mr. WYVELL. That is what, measured on the Warroad gage?

Maj. PEEK. It is 4 feet.

Mr. WYVELL. Assuming that an elevation of 2 feet lower should be determined upon, what would be necessary to be done to afford a complete and efficient use of the harbor?

Maj. PEEK. The original condition of the stream was one which had many bends. The work as laid out by the department straightened out the river bed by cutting across the bends. In making these cuts it was necessary to go through the hardpan and rock in order to get to the bottom of the channel. That channel has been practically completed to-day. Our work of maintenance simply consists in digging out this channel or pocket which has been completed. Lowering the level of the lake 2 feet lower than 4 feet on our gauge would mean digging an additional 2 feet over the entire bottom of the project, which would be digging into hardpan, clay, and rock.

Mr. WYVELL. That could be done, however?

Maj. PEEK. It is not an impossibility.

Mr. TAWNEY. At what additional expense could that be done?

Maj. PEEK. I could not state offhand.

Mr. MIGNAULT. The expense would be considerable, I suppose?

Maj. PEEK. Yes; it would be. The expense of maintenance is practically nominal, as it is only a silt which fills in.

Mr. WYVELL. You have some records which show the character and amount of navigation leaving Warroad Harbor, have you not?

Maj. PEEK. Entering and leaving; yes.

Mr. WYVELL. Will you please put that information into the record?

Maj. PEEK. The value of the exports and imports is about \$450,000.

Mr. WYVELL. That is for the year ending June 30, 1914, is it not?

Maj. PEEK. Yes.

Mr. WYVELL. What was the character of the ships which left the harbor?

Maj. PEEK. Some steamers, and mostly gasoline boats.

Mr. WYVELL. I think your record shows the number there, does it not?

Maj. PEEK. It does.

Mr. WYVELL. Will you please tell us the number?

Maj. PEEK. Sixteen boats, 16 gasoline launches, and several sailboats used the harbor during the season.

Mr. TAWNEY. What is the highest tonnage of any one of those boats?

Maj. PEEK. These records do not show that. We have that information in the office.

Mr. TAWNEY. Well, it is not material.

Mr. WYVELL. At how high a level would it be necessary to construct protecting works to protect the harbor, assuming that the lake should be raised particularly?

Maj. PEEK. During the last season the elevation was a trifle over 8 feet on the Government gauge, or 1,061.6. At that time, with a northeast sea blowing on the lake, considerable filling was carried into our interior channel, and this is always prevalent with a high stage of water. If a high stage of water were maintained, it would be in the interest of the Government to build a dike or revetment on the east side of the channel at the lake approach.

Mr. WYVELL. Now, passing to Zippel Bay, please inform the commission what work has been done there.

Maj. PEEK. At Zippel Bay commerce is not the main object. It is a harbor of refuge. The Government has built a small breakwater and a channel leading into the river. The breakwater is approximately 2,200 feet long, and with the dredging on the inside is all the work that the Government has done.

Mr. WYVELL. About what was the cost of that construction?

Maj. PEEK. The cost of that work was practically \$28,000.

Mr. WYVELL. When did that work begin?

Maj. PEEK. That work began in 1912.

Mr. TAWNEY. Is that breakwater completed?

Maj. PEEK. The original project called for 2,800 feet. After building 2,200 feet it was decided that that was sufficient, and the work was stopped.

Mr. TAWNEY. What, if any, effect has the level of the lake on the harbors on Rainy River? Is there not a harbor at Baudette under your jurisdiction?

Maj. PEEK. No, sir. We have some booms but no harbors.

Mr. TAWNEY. Are there no Government works there?

Maj. PEEK. No Government improvements. We have a preliminary examination to be made at the present time.

Mr. TAWNEY. A preliminary examination is authorized?

Maj. PEEK. At Ranier.

Mr. GARDNER. What would be the effect of this dike you spoke of in this river on the channel?

Maj. PEEK. It would prevent the silting in of the channel.

Mr. GARDNER. That would be the purpose of building it?

Maj. PEEK. Yes, sir.

Mr. TAWNEY. Maj. Peek, are you familiar with the estimate of Maj. Potter as to the cost of each foot of additional dredging here in the harbor of Warroad?

Maj. PEEK. I am not.

Mr. TAWNEY. The major made an estimate, in testifying before the commission at Washington, on the application of the city of Winnipeg for diversion of the waters of Shoal Lake. I do not now recall just what his estimate was. I thought you might be familiar with it.

Maj. PEEK. No; I am not.

Mr. TAWNEY. Any estimate that he made I imagine would be considered as correct.

Maj. PEEK. It should be.

Mr. ROCKWOOD. Maj. Peek, do you know what would be the cost of the revetment to keep out the silt that you speak of?

Maj. PEEK. The cost of that revetment would be fairly nominal; I would say not over \$18,000 or \$20,000.

Mr. ROCKWOOD. It would be small in comparison with deepening the harbor?

Maj. PEEK. Yes.

Mr. ROCKWOOD. I understand you to mean in the testimony that you have already given, Maj. Peek, that if the water falls below 1,057.6 it is to the detriment of navigation.

Maj. PEEK. It is, due to the fact that the Government never provided for a channel of 8-foot width below that reading on the gauge.

Mr. ROCKWOOD. Then, if that is the case, it is true, is it not, that the water must be prevented from falling below 1,057.6 in order to properly conserve navigation?

Maj. PEEK. The river and harbor act reads 8 feet below mean low water, as I recollect it, but what "mean low water" is has never been determined, and the question is still in doubt. I think it is to be settled by a commission.

Mr. ROCKWOOD. In improving the harbor the Government engineers must have determined, must they not—at least for the purpose of that improvement—that mean low water was 1,057.6?

Maj. PEEK. Not exactly. The old river and harbor acts provided that a certain project should have a certain depth. At the present time, however, that wording is no longer used, and they refer those depths to mean low water or low low water. Some of the earlier river and harbor projects simply stated 18 feet of water on the bar. If in that month we had high water, as far as the intent of Congress was concerned, in following the letter of the law you would have 18 feet of water as the water was on that date.

Mr. ROCKWOOD. I will put the question in another way. I did not mean to be argumentative at all. I will put the question in this way: Until Congress shall have made the appropriation and the harbor and the approaches shall have been deepened, navigation will suffer unless the water is maintained at 1,057.6 and above. Is that correct?

Maj. PEEK. I think so.

Mr. ROCKWOOD. Now, it is not feasible to maintain an absolutely uniform stage at 1,057.6, is it, Major?

Maj. PEEK. You have reference to this lake?

Mr. ROCKWOOD. Yes.

Maj. PEEK. I would say not.

Mr. ROCKWOOD. Have you any opinion as to what range it is necessary to take into consideration for the inevitable rise and fall of the lake?

Maj. PEEK. From the study I have given the subject I would consider myself not competent to answer.

Mr. ROCKWOOD. Do you mean by that that you can not give any range at all, or that you can not give an exact range? Can you give it approximately or within limits?

Maj. PEEK. I would not want to estimate it. I would want to be fair to myself and know the circumstances. I do not know what the discharge of this lake is nor the rainfall.

Mr. GLENN. You say that at an elevation of 1,057.6 those improvements you have already made here can be maintained, but a 2-foot lower level would mean digging all over the project.

Maj. PEEK. Approximately.

Mr. GLENN. Have you estimated what it would be if we put it at 1,061 or 1,062?

Maj. PEEK. That would mean continually, as we are at present, simply removing the silt that fills into the channel bed. It would also have the effect that we should put in the dike at Warroad. In addition to this, if the water is raised at Zippel, a breakwater which we built there a few years ago should receive a great deal more protection, because with the high water, as it has been up to 8 on our gauge, or 1,061.6, it is detrimental to its preservation.

Mr. STEENERSON. Do you know anything about the draft of these boats that are frequently in this harbor?

Maj. PEEK. I think the maximum is 7 feet.

Mr. STEENERSON. What boat is that?

Maj. PEEK. I think the *Kenora* draws that, if she is loaded.

Mr. STEENERSON. The *Kenora* does not make this harbor now, does she?

Maj. PEEK. I think she attempts to come in here once in a while, but most of the boats coming in now are gasoline launches, and I could not say what their draft is.

Mr. STEENERSON. They would not need all of that.

Maj. PEEK. No, sir.

Mr. STEENERSON. Outside of the *Kenora*, the boats that use this harbor will not draw over $3\frac{1}{2}$ or 4 feet of water, will they?

Maj. PEEK. I could not answer that. That is a question of fact that could easily be determined, though.

Mr. STEENERSON. As I understand it, the *Kenora* has not made this harbor this season.

Maj. PEEK. No, sir.

Mr. STEENERSON. And the navigation has been decreasing ever since the railroad built around the lake, has it not?

Maj. PEEK. I think that is a fact.

Mr. STEENERSON. It is getting smaller and smaller every year. Now, of that commerce, valued at \$450,000, what is the principal item?

Maj. PEEK. Fish, lumber, cedar poles, and logs.

Mr. STEENERSON. How would the poles, logs, and lumbering compare with the value of the fish?

Maj. PEEK. I have only a consolidated figure. I have not the items listed separately.

Mr. STEENERSON. You do not know anything about the tonnage of fish?

Maj. PEEK. I could not state.

Mr. CAMPBELL. Do you know when the Warroad Harbor improvements were begun under the authority of Congress?

Maj. PEEK. In 1902.

Mr. CAMPBELL. When was the dredging to the present depth completed?

Maj. PEEK. In 1912.

Mr. CAMPBELL. Since then it has been confined to taking out the silt.

Maj. PEEK. Yes, sir.

Mr. KEEFER. Would any other place than Zippel require any attention from the harbor point of view if you were trying to get 1,061.6?

Maj. PEEK. The United States Government has only the improvement of these two ports at present.

Mr. KEEFER. What would be the additional expenditure there required? Of what nature would it be?

Maj. PEEK. The original project cost approximately \$28,000. It would require a structure much more stable and much greater in extent than the old one, probably two or three times the cost.

Mr. KEEFER. That is the only one that you know of just at present?

Maj. PEEK. That is the only one with which I am charged.

Mr. KEEFER. Have you anything to do with the mouth of the Rainy River?

Maj. PEEK. We have no improvements.

Mr. GLENN. Maj. Peek, do you know enough about the levels to state what in your judgment would be the best level to maintain in the interest of navigation?

Maj. PEEK. Considering the Government works as they stand to-day, and from a selfish point of view of the United States, I would say that a range between 4 and 7 feet on our gauge would be suitable, or between 1,057.6 and 1,060.

Mr. GLENN. Anything higher or lower would be detrimental to navigation, in your judgment?

Maj. PEEK. It may not be detrimental to navigation, but it would be detrimental to the works which the Government has built.

Mr. GLENN. We want to know what effect it would have on navigation.

Mr. STEENERSON. The only effect would be that if they went lower than 1,057.6 they would have to deepen the harbor.

Maj. PEEK. It would cost money to dig it out; that is, if the Government maintained an 8-foot depth for navigation.

Mr. WYVELL. He asked you if any lower level than 4 feet on the Government gauge would be detrimental to navigation. You really mean detrimental to the present state of the Government works, do you not?

Maj. PEEK. Absolutely so.

Mr. WYVELL. In other words, if a 2-foot lower level were maintained and the Government did appropriate the money and it was spent, ships could then sail as freely as they do now?

Maj. PEEK. Absolutely so.

Mr. TAWNEY. Do you know what the condition of the channel is on the other side of the line from the Lake of the Woods?

Maj. PEEK. In Canada?

Mr. TAWNEY. Yes.

Maj. PEEK. I do not know, sir.

Mr. TAWNEY. You do not know, then, whether the level of 2 feet below 1,057.6 would be detrimental to navigation on the lake?

Maj. PEEK. I do not know, sir.

Mr. TAWNEY. Is there a harbor at Zippel?

Maj. PEEK. Yes, sir.

Mr. KEEFER. Have you taken into consideration the effect of either of those levels on the Rainy River navigation, Maj. Peek?

Maj. PEEK. No, sir.

Mr. KEEFER. You have never given the Rainy River navigation phase any consideration as yet?

Maj. PEEK. No, sir.

Mr. KEEFER. You do not know what draft should be maintained there?

Maj. PEEK. I do not.

Mr. KEEFER. There is quite a stretch of river navigation there, is there not?

Maj. PEEK. Yes, sir.

Mr. KEEFER. This Kenora, that you speak of, goes up and down there?

Maj. PEEK. It does.

Mr. KEEFER. Rainy River is an international stream, I believe. It is the boundary line, is it not?

Maj. PEEK. Yes, sir.

Mr. KEEFER. Has any of the dredging that has been done at the mouth been done internationally or only by one of the Governments? There has been some dredging there, I understand.

Maj. PEEK. Some dredging was done by one of the private corporations.

Mr. KEEFER. You know of none done, for instance, by the United States Government?

Maj. PEEK. I do not know of any, sir.

Mr. KEEFER. Do you know whether any has been done by the Canadian Government at the mouth of the river?

Maj. PEEK. Not to my knowledge.

Mr. KEEFER. Do you know whether that river silts up a good deal at the mouth?

Maj. PEEK. I know very little about the Rainy River.

Mr. KEEFER. I just want to elicit all the information possible and not in any way to get you to say anything on a subject that you are not familiar with.

Maj. PEEK. I am very unfamiliar with the Rainy River.

Mr. KEEFER. But you do know that it is a navigable stream?

Maj. PEEK. Yes, sir.

Mr. ANDERSON. How long have you had charge of harbor improvements at Warroad?

Maj. PEEK. Only for the past two months.

Mr. ANDERSON. How long have you been in the War Department of Navigation and been more or less familiar with the conditions here?

Maj. PEEK. It is my fourth year. I am residing at Duluth.

Mr. ANDERSON. Do you know anything about a request being made by the Department of State that a minimum level of water in the lake be kept up?

Maj. PEEK. I think I saw a copy of that paper.

Mr. ANDERSON. I have here a copy of a letter from the Department of State, under date of May 6, 1905, in which a request was made on the Canadian authorities to operate the dam so as to prevent the level being reduced below 7.2 feet. That 7.2 feet represents 1,060.5, does it not?

Maj. PEEK. 1,060.8.

Mr. ANDERSON. Do you know anything at all about that request or did you ever hear of that request in connection with your work?

Maj. PEEK. I heard about it, but have given it no consideration.

Mr. ANDERSON. Any work that has been done under your supervision here has been done upon the assumption of the maintenance of the works a Kenora—that is, the dam there—has it not?

Maj. PEEK. Yes.

Mr. ANDERSON. Are you familiar, in a general way, with the history of the improvements at Warroad and the demands made by the people of Warroad from time to time for such improvements?

Maj. PEEK. I have heard statements, but I do not feel qualified to repeat them, because I did not look into them at all.

Mr. ANDERSON. Are you in a position to say that the people of Warroad for many years past have looked upon navigation as an important business in connection with the town?

Maj. PEEK. Yes, sir.

Mr. ANDERSON. Congress has from time to time appropriated sums of money for the purpose of making harbor improvements here.

Maj. PEEK. Yes, sir.

Mr. ANDERSON. How much was expended altogether?

Maj. PEEK. \$117,900 has been appropriated.

Mr. ANDERSON. And the last appropriation was made when?

Maj. PEEK. In March, 1915.

Mr. ANDERSON. Then the appropriations are being made from year to year and kept up, are they?

Maj. PEEK. Yes, sir.

Mr. ANDERSON. On the question of reducing the level below 1,057.6, you said to counsel for the United States that it was a mere matter of expenditure of money to dig the channel lower, but the expenditure would be very much disproportionate, would it not?

Maj. PEEK. To the commerce?

Mr. ANDERSON. Well, it is disproportionate to the expenditure that has been made up to date or that would be required to be made if the water were at a higher level.

Maj. PEEK. If the water were at a higher level it would cost simply the maintenance fee. It would require no improvements.

Mr. ANDERSON. So long as the Government appropriates the money, there would be no difficulty in spending it. But when you get down below 1,057.6 you get to other work.

Maj. PEEK. Hardpan and boulders.

Mr. ANDERSON. Are you familiar with conditions from a navigation standpoint as they existed in Warroad in 1910 and 1911?

Maj. PEEK. When they had the very low water?

Mr. ANDERSON. Yes.

Maj. PEEK. That was the time that the Government did some extra digging.

MR. ANDERSON. That was at the request of the people of Warroad?

Maj. PEEK. Yes.

MR. ANDERSON. They complained about the low water?

Maj. PEEK. As stated by me before, low water had never been determined by the Government.

MR. ANDERSON. That is technically, but I mean low water in a general sense.

Maj. PEEK. There being low water, the Government dug in order to carry on navigation.

MR. STEENERSON. I understand that the engineer has only been in charge here two years, and I do not suppose he can testify about this.

MR. ANDERSON. Except from his knowledge of the records at the department.

MR. STEENERSON. But you are asking about the people of Warroad years before he took charge here.

MR. ANDERSON. Well, the witness is giving evidence.

Maj. PEEK. Mr. Chairman, am I permitted only to give facts as personally known, or information gained by knowledge which I have gathered?

MR. TAWNEY. If you can answer the questions that are asked you, your duty is to answer them. If you can not, it is your duty to say so.

MR. GLENN. He is not to give hearsay testimony. That is not competent.

MR. TAWNEY. You can hardly determine the rules of investigation in a case of this kind by the rules that would be applicable in a controversy between parties. Of course, there is more latitude allowed in an investigation of this kind.

MR. STEENERSON. That may be true; but where they are as accessible as these things—

MR. TAWNEY. It is up to the witness himself to say what he knows and what he does not know.

MR. ANDERSON. He is the officer of the War Department, brought here to give evidence with regard to this matter.

MR. TAWNEY. If he knows of the records of the office, he is competent to testify about them.

MR. ANDERSON. Do you know, Maj. Peek, what the low stage of water was in the fall of 1910? Have you got any record of that?

Maj. PEEK. We have.

MR. ANDERSON. Can you tell me what it was?

Maj. PEEK. What year are you speaking of?

MR. ANDERSON. Taking either 1910 or 1911. I have the lowest level as 1,058.8. I do not know whether that is correct or not.

Maj. PEEK. Two and four-tenths is the lowest reading of the Government gauge, which would be 1,056.

MR. ANDERSON. That was in what year?

Maj. PEEK. That was in September, 1911.

MR. ANDERSON. But the information I have is that there was a complaint from the citizens of Warroad in December, 1910, about the low water which existed in that fall.

MR. STEENERSON. I object to that, because it calls for hearsay evidence. This officer has not any record of such things. There is no such record required to be kept.

Mr. ANDERSON. The information I have is that they are on file in the War Department.

Mr. TAWNEY. I suppose the proper way would be to ascertain whether he has any knowledge of records of that kind in the War Department; and if he has not, that would end it.

Maj. PEEK. I could not state whether they are on file or not.

Mr. TAWNEY. If he has the records of the reading of the gauge in 1910, he can give that information.

Maj. PEEK. I have the gauge readings for 1910.

Mr. ANDERSON. What is the lowest point for 1910?

Maj. PEEK. Three hundred and ninety on the United States gauge appears to be the lowest reading.

Mr. ANDERSON. What would that be on the United States Geological Survey records?

Maj. PEEK. 1,057.5.

Mr. ANDERSON. Mr. Chairman, the question has been raised as to how far we can go into reports that are of record in the War Department. I take it that if I refer you to a record in the United States War Department that it is proper for you to examine that, and that is really what I am doing now, perhaps in an indirect way, but I am informed that there is a report under date of January 11, 1911, in the War Department from the citizens of Warroad with reference to this question of the low stage of water.

Mr. TAWNEY. If it becomes material in the investigation, of course, the commission would examine into it and ascertain what the nature of that complaint was.

Mr. WYVELL. Or if counsel wants it put in there is no objection on our part.

Mr. ANDERSON. I have not got it. All I have is an extract from it.

Mr. WYVELL. We do not object to any such evidence. If counsel wants us to put it in, we will get it.

Mr. ANDERSON. I may ask that that be done. Do I understand, Maj. Peek, that the Kenora has not touched at this harbor, so far as you know, this year?

Maj. PEEK. Not to my knowledge.

Mr. ANDERSON. If it has not, why has it not?

Maj. PEEK. I do not know.

Mr. ANDERSON. Well, has the lowness of the water interfered?

Maj. PEEK. I do not know.

Mr. ANDERSON. You are not familiar enough with the situation to say as to that?

Maj. PEEK. I do not know.

Mr. ANDERSON. Suggestion has been made by Mr. Steenerson that the navigation on the lake is decreasing. Are you in a position to know that as a matter of fact?

Maj. PEEK. As a matter of fact, no.

Mr. ANDERSON. I think it is so. I am prepared to admit that it is so; but, following up the lines of Congressman Steenerson's questions, there is no reason to anticipate that navigation may not possibly increase in the future?

Maj. PEEK. It is not an unreasonable supposition.

Mr. STEENERSON. You were asked if you knew or had heard about a communication from the War Department to the State Department

asking for the transmission of a request to the British or Canadian Government relating to certain levels. You said you had heard of such a communication.

Maj. PEEK. I have.

Mr. STEENERSON. Have you also heard that when Mr. Taft was Secretary of War, or subsequently, they sent a communication to the Secretary of State to the effect that they did not wish that request to be pressed further?

Maj. PEEK. No, sir.

Mr. STEENERSON. You did not know about that? You had not heard about that? Well, I will furnish the commission with reference to that communication in which they indicated to the other Government that they did not wish to press that request, which communication has never been answered or acknowledged.

Mr. TAWNEY. If you have it, would it not be well to put it in right here?

Mr. STEENERSON. I have a copy, but it is not certified.

Mr. TAWNEY. It is a photographic copy, is it not?

Mr. STEENERSON. No; it is not a photographic copy. It was sent to me and I can go over to the hotel and get it now.

Mr. TAWNEY. I thought you had it here. You need not bother about going to get it.

Mr. STEENERSON. I will submit it.

Mr. ANDERSON. I would suggest that all the correspondence on this point be put in.

Mr. KEEFER. I do not know, but I have an idea that there is a clerical error, if I understood your figures correctly, Maj. Peek. To one member of the commission I think you said for the purpose of navigation there should be, in your judgment, a range of from 4 to 7 feet. Did I understand you correctly?

Maj. PEEK. The present project of the Government is for an 8-foot depth of water and with the channel as it is dug to-day it will permit a reading of 4 feet on the United States gauge before we get down to hardpan.

Mr. KEEFER. Perhaps we could get that so as to have it correct. Perhaps you took it down yourself, Mr. Glenn?

Mr. GLENN. He said he would suggest from 1,057.6 to 1,067.6.

Mr. KEEFER. They did not quite correspond with his previous statement.

Mr. GLENN. I think what he said before was on another point.

Maj. PEEK. That is on the United States gauge.

Mr. KEEFER. Now, I understand it. There seemed to be a clerical mistake in the figures, and I wanted to correct it.

Mr. STEENERSON. Mr. Landby has handed me what I believe is a copy of that War Department letter of April 27, 1906, to the Secretary of State.

Mr. TAWNEY. It has been suggested that the whole correspondence be put in.

Mr. WYVELL. We can get that. I had no idea of the turn this situation was going to take. As the commission knows, I am a great stickler for the entire correspondence on a subject being put in. If any of it goes in I quite agree that all of it should go in.

MR. STEENERSON. I will simply refer to this as the date that the Secretary of War requested the Secretary of State not to press further the question of the depth of the harbor.

MR. TAWNEY. Is that the original letter or a copy?

MR. STEENERSON. That is a copy.

MR. TAWNEY. Is there anyone here who desires to give any testimony regarding navigation and harbor interests in addition to what Maj. Peek has set forth?

MR. MARSCHALK. I understood that you were going to take up agricultural interests first. Certain things occurred to me when the gentleman asked certain questions of the United States engineers that I would probably have to look up regarding the request made by the citizens of Warroad and the levels of those years.

MR. TAWNEY. If you are not prepared to proceed we will take up now the agricultural interests and you can present, Mr. Steenerson, the evidence in your own way and in any order which you see fit.

The commission is in receipt of a communication signed by the representatives of three of the railroads of Canada bearing upon this inquiry and it is suggested by members of the commission that this communication be read before we begin to hear the testimony of the agriculturists so as to direct their attention to any matter that is contained in this communication respecting the levels of the Lake of the Woods. The secretary of the commission will now read that letter.

(Secretary Burpee then read the following letter:)

[Canadian Northern Railway, Canadian Pacific Railway, Transcontinental Railway.]

WINNIPEG, September 4, 1915.

CHAIRMAN CANADIAN INTERNATIONAL WATERWAYS COMMISSION,
Ottawa.

DEAR SIR: The question of the maintenance of a reasonably high-water level of the boundary waters of Rainy Lake, Rainy River, Lake of the Woods, and tributary waters has an important bearing on the development of the summer resorts already established at considerable expense by the Canadian Pacific Railway, Canadian Northern Railway, and Transcontinental Railway.

For a number of years it has been the aim of these transportation lines to increase the summer travel and tourist travel to the resorts located on the above-mentioned waters, both by the expenditure of considerable money for advertising purposes and also certain improvements which have been carried out from time to time to facilitate and improve such traffic.

The free navigation of these waters is essential to successfully exploit their advantages as desirable waters on which to establish summer homes or camps, and it is felt that we should bring to the attention of your honorable body the importance of maintaining the levels of the boundary waters above mentioned from the viewpoint of the transportation companies interested.

These waters have been widely advertised as navigable, and sufficient travel has been developed to justify the operation of steamer lines touching at points which, owing to the physical formation of the country, could not be conveniently reached by railways, and we respectfully submit that due consideration be given to the interest of the transportation lines as having an important bearing upon the findings of your honorable body.

Yours, truly,

R. CREELMAN,
G. P. A., Canadian Northern Ry.
A. C. SHAW,
G. P. A., Canadian Pacific Ry.
W. E. DUPEROW,
A. G. P. A., Transcontinental Ry.

MR. STEENERSON. Mr. Chairman, I will now call Mr. Landby.

TESTIMONY OF A. M. LANDBY, OF WARROAD, MINN.

(Mr. A. M. Landby, being duly sworn, testified as follows:)

Mr. STEENERSON. What is your occupation?

Mr. LANDBY. Farmer.

Mr. STEENERSON. How old are you?

Mr. LANDBY. I am 48.

Mr. STEENERSON. Where is your home farm?

Mr. LANDBY. It is in section 1, township 162, range 36.

Mr. STEENERSON. Your farm is marked on the map that has been offered in evidence, sheet No. 10, section No. 1?

Mr. LANDBY. Yes, sir; and in 12.

Mr. STEENERSON. That is where your home is?

Mr. LANDBY. Yes, sir; that is my home place.

Mr. STEENERSON. How much is there in that tract where your home is?

Mr. LANDBY. Three hundred and twenty acres.

Mr. STEENERSON. When did you first move there?

Mr. LANDBY. I filed on it on the 16th day of October, 1898.

Mr. STEENERSON. You have buildings on there?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. What are the buildings?

Mr. LANDBY. I have a dwelling house, a workshop, and machine sheds and woodshed combined; a granary and a barn with horses and cattle.

Mr. STEENERSON. How much of a dwelling house is it?

Mr. LANDBY. It is 26 by 44.

Mr. STEENERSON. Two stories?

Mr. LANDBY. Partly. There is one part one story; that is the size of the basement 26 by 44 and the main building, which is two stories high, is 26 by 30. There is one part one story high, 14 by 26.

Mr. STEENERSON. Is there a porch?

Mr. LANDBY. Yes, sir; there is a porch the full length of the west side. The porch is 7 by 40.

Mr. STEENERSON. Is it screened in?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. I show you this photograph and ask you if that is a photograph of your buildings?

Mr. LANDBY. Yes, sir; it is.

Mr. STEENERSON. I offer that in evidence.

Mr. TAWNEY. It will be received, although we have a photograph of his house in the official report of the engineers.

(The photograph offered and received in evidence is marked "Exhibit A.")

Mr. STEENERSON. What have you used those 320 acres for since you have had them?

Mr. LANDBY. In the beginning I started with stock raising.

Mr. STEENERSON. Well, you used it for farming?

Mr. LANDBY. For farming; yes.

Mr. STEENERSON. You used it for stock raising and what else?

Mr. LANDBY. And raising grains, hay, potatoes, and whatever comes handy.

Mr. STEENERSON. How much of it has been cleared and used for these purposes?

Mr. LANDBY. Do you mean on these 320 acres?

Mr. STEENERSON. Yes; on these 320 acres.

Mr. LANDBY. I think there are about 115 or 120 acres under cultivation and there must be 40 or 50 acres of land cleared off for hay land that has not been cultivated.

Mr. STEENERSON. That has not been plowed, you mean?

Mr. LANDBY. Yes; and all other land is fenced in.

Mr. STEENERSON. Fenced in for pasture?

Mr. LANDBY. Yes.

Mr. STEENERSON. This that has been cleared of brush and used for hay, is that entirely wild hay or part tame?

Mr. LANDBY. After the crop is taken off a couple of years it grows into a redtop. That is more valuable, that tame redtop.

Mr. STEENERSON. Have you sold any tame red grass?

Mr. LANDBY. Yes; it grows in with what is sowed.

Mr. STEENERSON. What varieties of tame grass grow there?

Mr. LANDBY. Tame redtop and clover and timothy. Of course, clover don't catch when you sow it on the side like that, but timothy and redtop does.

Mr. STEENERSON. What is the soil?

Mr. LANDBY. The subsoil is heavy gray clay, and the topsoil is a heavy loam.

Mr. STEENERSON. What is the color of it?

Mr. LANDBY. It is in some places a little brownish and in other places quite black.

Mr. STEENERSON. You may state whether or not it is a rich productive soil.

Mr. LANDBY. Yes, sir; very rich.

Mr. STEENERSON. You have been farming since you were old enough to work?

Mr. LANDBY. I was raised on a farm in Sweden and between that I have been in business seven years; otherwise, I have been farming ever since I was old enough to do anything.

Mr. STEENERSON. What other crops have you raised besides grain and hay? Have you raised potatoes?

Mr. LANDBY. Yes, sir; last year I raised potatoes on two acres.

Mr. STEENERSON. Does it yield good?

Mr. LANDBY. I got a little carload on 2 acres—600 bushels.

Mr. STEENERSON. Six hundred bushels on 2 acres. How much hay, clover, for instance, do you raise on this land per acre?

Mr. LANDBY. I get 4 tons of clover where I get solid clover in the first cutting. That happened this year. The second crop I haven't cut yet, but if it keeps on this weather I will get a seed crop that will turn out to be quite valuable.

Mr. STEENERSON. I suppose you have raised garden vegetables?

Mr. LANDBY. Oh, yes, sir.

Mr. STEENERSON. They produce well?

Mr. LANDBY. They produce well.

Mr. STEENERSON. And fodder corn?

Mr. LANDBY. Yes, sir; I have some fodder corn 12 feet high.

Mr. STEENERSON. What is the yield of oats and barley and rye and wheat on your land per acre?

Mr. LANDBY. The highest I have had is 71 bushels per acre for oats.

Mr. STEENERSON. And for wheat?

Mr. LANDBY. Wheat I haven't sowed very much. The highest I have sowed is 5 acres in any one year, and the highest has been 20 bushels. This year I haven't thrashed yet. I may let you know this evening what the yield will be this year.

Mr. STEENERSON. How far are you from the market? Do you market here in Warroad?

Mr. LANDBY. I market all heavy products at Swift.

Mr. STEENERSON. How far is it to Swift?

Mr. LANDBY. A mile and a half.

Mr. STEENERSON. That is where you market your hay?

Mr. LANDBY. Hay and potatoes and everything else.

Mr. STEENERSON. You sell hay?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. Is there a good market for it there?

Mr. LANDBY. Generally; there used to be a fairly good market.

Mr. STEENERSON. There is a good deal of lumbering going on in that vicinity?

Mr. LANDBY. Yes; there has been.

Mr. STEENERSON. There has been in the past?

Mr. LANDBY. Yes.

Mr. STEENERSON. What do you get per ton for your hay?

Mr. LANDBY. It varies in quantity. In different years I have sold hay from \$10 to \$16 per ton.

Mr. STEENERSON. You have some more land in that neighborhood I believe?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. How much?

Mr. LANDBY. I have another quarter in section 3.

Mr. STEENERSON. What quarter?

Mr. LANDBY. The southeast quarter of section 3.

Mr. STEENERSON. In the same township?

Mr. LANDBY. The same township.

Mr. STEENERSON. How much of that is under cultivation?

Mr. LANDBY. I have 82 acres that has been plowed.

Mr. TAWNEY. Is that also indicated on sheet No. 10?

Mr. LANDBY. No; it belongs to the same farm.

Mr. TAWNEY. On what sheet is it represented?

Mr. LANDBY. It is not on the maps. It is the southeast corner of section 3. It is a part of my farm.

Mr. MIGNAULT. Mr. Steenerson, is that involved if it is farther back than the lake?

Mr. STEENERSON. Yes; I think so. I might state that I have given that very serious consideration. I did not expect to discuss it just now, but I will do so. I regard it as being a very important point in this matter that we are not confined to the land marked on these plats as submerged lands; that we are necessarily here to inquire not only the direct but the indirect effect of the altering of the lake levels. I will discuss that later on.

Mr. MIGNAULT. My question was just to find out what your idea was.

Mr. STEENERSON. Mr. Landby, you say you run that place in connection with those 320 acres?

Mr. LANDBY. Yes, sir. I have no buildings on that.

Mr. STEENERSON. You operate the whole farm as one farm?

Mr. LANDBY. Yes, sir.

Mr. MIGNAULT. How far back is it?

Mr. LANDBY. There is a mile between the home farm and this one.

Mr. MAGRATH. Does the railroad run through it?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. It is directly west from section 1.

Mr. LANDBY. Yes; directly west from the house.

Mr. TAWNEY. In what township is it?

Mr. LANDBY. In the same township—township 162, range 36.

Mr. STEENERSON. How much of it has been cropped?

Mr. LANDBY. Eighty-two acres in clover and timothy and field crop—that is, rye and oats and flax. Twenty-five or thirty acres are cleared for hay—that is, cut.

Mr. STEENERSON. There are how many acres altogether that have been cropped—107 acres?

Mr. LANDBY. Yes; the 82 acres and the 25 or 30 acres.

Mr. STEENERSON. And the balance of that quarter is not yet cleared?

Mr. LANDBY. No.

Mr. STEENERSON. What is the character of that?

Mr. LANDBY. Well, it is brush and poplar.

Mr. STEENERSON. About how many acres of your cleared land has been cleared of brush, or how much of it was natural prairie?

Mr. LANDBY. There has not been one quarter that I have not cleared.

Mr. STEENERSON. You have cleared it all?

Mr. LANDBY. I have cleared it all.

Mr. STEENERSON. You may state whether or not that has been expensive work.

Mr. LANDBY. In some instances it has been expensive, and in some cases not so very expensive. In the earlier days some of it had been burned over and the stumps had rotted so that it was easier.

Mr. STEENERSON. How did you do the work; did you do it yourself?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. You and your sons?

Mr. LANDBY. My sons were too young at that time. I started alone, and after I grewed a little stronger I hired some help.

Mr. STEENERSON. How many horses do you use in the operation of this farm?

Mr. LANDBY. Do you mean work horses or horses altogether?

Mr. STEENERSON. Well, work horses.

Mr. LANDBY. I have seven work horses.

Mr. STEENERSON. Then you raise some colts?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. How many head of cattle have you?

Mr. LANDBY. I have 38 at present.

Mr. STEENERSON. Do you have machinery?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. Do you have any reapers or mowers?

Mr. LANDBY. I have a couple of binders, a hay loader and hay press, wagon; everything that is needed on a farm, and a Ford automobile.

Mr. STEENERSON. You are equipped with buildings and horses and machinery to operate this whole farm, this three-quarter section?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. Now, when you first went on there, was any part of your land hurt or flooded by water?

Mr. LANDBY. I was on that land in October, 1898, and as the law requires that we shall see all corners I went and found all corners on my land, and I could not find any water nowhere.

Mr. STEENERSON. About how far was it from your land down to the lake shore at that time?

Mr. LANDBY. Do you mean from the south corner?

Mr. STEENERSON. Well, where it came the nearest.

Mr. LANDBY. You mean the lake?

Mr. STEENERSON. Yes.

Mr. LANDBY. We had an original lake shore, and, according to the map I had, it showed a big fraction in section 36 in the next township.

Mr. STEENERSON. I am not asking about that; I am asking you about the distance.

Mr. LANDBY. According to that, it should be a mile from our south line, where I have a house now——

Mr. STEENERSON. Is it not the north line?

Mr. LANDBY. I am living by the south line.

Mr. STEENERSON. Yes; but the north line of your land is nearest to the lake, is it not?

Mr. LANDBY. Yes, sir.

Mr. STEENERSON. How far was it from that land to the water at that time, in October, when you took it?

Mr. LANDBY. The land is cut out in different parts.

Mr. STEENERSON. For different distances?

Mr. LANDBY. Yes, sir. When I filed I left out the northeast quarter and took the northwest in place of it.

Mr. STEENERSON. I am just talking about the distances now. How did they vary? How near and how far along the line next to the lake was it to the water's edge at that time?

Mr. LANDBY. I do not think that the water at that time went over the original lake shore.

Mr. STEENERSON. That would be some distance away?

Mr. LANDBY. Yes; some distance away.

Mr. STEENERSON. Since this high water in late years, how far has it affected your land?

Mr. LANDBY. It has affected it clear across. There is a drain across it. There is a creek coming in.

Mr. STEENERSON. How near to your dwelling house, for instance, has the water come?

Mr. LANDBY. It has come within 20 rods.

Mr. STEENERSON. Near the stables?

Mr. LANDBY. Yes, sir; right back of the stables.

Mr. STEENERSON. Is there a pasture on the north side of your stables?

Mr. LANDBY. It is all pasture below the plowed fields, all fenced in for pasture.

Mr. STEENERSON. You had some of that land cultivated and under crop?

Mr. LANDBY. Yes.

Mr. STEENERSON. Nearest to the lake shore?

Mr. LANDBY. Yes.

Mr. STEENERSON. What kind of crops did you raise there?

Mr. LANDBY. It was three years ago; I had flax on some.

Mr. STEENERSON. Is that the flax you took a sample of and brought in to this commission?

Mr. LANDBY. Yes.

Mr. STEENERSON. What grows on that field now, on which you then raised the flax?

Mr. LANDBY. I have not been able to get on to it before the last few days because it has been covered with water, but I discover now it is nothing but cat-tails.

Mr. STEENERSON. A good crop of cat-tails?

Mr. LANDBY. Yes.

Mr. STEENERSON. And how is the soil as to being firm or soft or otherwise?

Mr. LANDBY. Well, it is soft; of course, owing to a very hard grey-clay subsoil, it is in a shape so that a person can walk on it and not get submerged, providing the water did not get too deep, but cattle can not be in it; they simply refuse.

Mr. STEENERSON. They sink down?

Mr. LANDBY. Well, they refuse to pasture in it.

Mr. STEENERSON. Is it on account of it being soft?

Mr. LANDBY. Well, they can walk for a while, but after walking for a while in that clay it works up to their bellies and they simply can not go there; and if they are forced to be there they will come out with sore feet, so that they can not walk.

Mr. STEENERSON. How many acres of your farm has been injured in that way?

Mr. LANDBY. On my homestead I will say that continuously, during the last three years, at least, I have not had more than 40 acres that has not been affected in that way.

Mr. STEENERSON. That is three-fourths of that quarter?

Mr. LANDBY. Yes.

Mr. STEENERSON. And how much on the other quarter?

Mr. LANDBY. I have 40 acres.

Mr. STEENERSON. What is the value of your farm, in view of the improvements and buildings and pasture and everything, assuming that it was not injured by this high water?

Mr. LANDBY. If it was not injured I feel that it should not be for sale, but as to value, I would say that it was worth \$100 an acre if it is not injured.

Mr. STEENERSON. Now, how much has it been injured? How much is it worth, flooded as it has been this year?

Mr. LANDBY. Where it is submerged it is worthless, and where there is water on it and it should happen to go down enough so that you can use it for grass, it is worth something.

Mr. STEENERSON. How does the fact that three-quarters of one of your quarters and one-quarter of the other are made worthless by water affect the value of the rest of the farm?

Mr. LANDBY. Well, being that I have buildings on my homestead, that is the handiest to work in all respects, and the cattle——

Mr. STEENERSON. Does it decrease the value of the rest of the farm to take that out?

Mr. LANDBY. Yes; that is the way it appeared to me.

Mr. STEENERSON. It would be something like taking a piece of cloth out of the knees of your pants; it would spoil the whole pants?

Mr. LANDBY. Yes.

Mr. STEENERSON. How much less is this farm worth with the conditions as they are—with the water injuring the land as it is, taking the farm as a whole—than it would be if it were not injured by water?

Mr. LANDBY. The whole farm would be worth about \$20,000 less.

Mr. MAGRATH. He is referring to the first farm?

Mr. STEENERSON. No; to the whole three-quarter section, which he operates as one farm. In cases where they take part of a man's farm, they have a right to take the farm as a whole. I understand that is the case in Canada as well as in the United States.

Mr. MIGNAULT. Perhaps you will indicate on the plan where his farm is.

Mr. STEENERSON. Mr. Landby will tell you.

(Mr. Landby points out his farm on plan.)

Mr. TAWNEY. Can you not give us the exact description of your land, and then we can figure it out on the map?

Mr. ROCKWOOD. He gave the exact point. He said the northwest quarter of section three and the south half of section one.

Mr. LANDBY. No; that is not right.

Mr. TAWNEY. State it for the record again.

Mr. LANDBY. I own the southeast quarter of the southeast quarter of section one and the west half of the southeast of section one.

Mr. TAWNEY. Of the southeast quarter, you mean?

Mr. LANDBY. Yes; and then I own the north half of the southwest of one, and then I own the south half of the southwest of one, and then the north half of the northwest of twelve, and the southeast quarter of section three.

Mr. STEENERSON. What is the character of the land in that neighborhood?

Mr. LANDBY. Well, it is all as I have described.

Mr. STEENERSON. The other land, outside of your land—the other farms in that neighborhood are of a similar quality?

Mr. LANDBY. Similar condition, the same kind of soil; they differ in the way of being worth more or less, some of them.

Mr. STEENERSON. Are you organized there as a school district?

Mr. LANDBY. Yes; we have a consolidated school.

Mr. STEENERSON. Where is the consolidated school building?

Mr. LANDBY. It is a mile and a quarter from my house.

Mr. STEENERSON. Have you built roads there?

Mr. LANDBY. Yes; we have very good roads.

Mr. STEENERSON. How about ditches—drain ditches?

Mr. LANDBY. Well, this last season we have put in a drainage system on the east; that is in the next township, half a mile from the corner of my land; that ditch extends to the lake.

Mr. STEENERSON. Are there any ditches east of there, built by the township, or any county ditches?

Mr. LANDBY. Well, there is one 6 miles farther on; that is entering into the lake also.

Mr. STEENERSON. Have you observed how these ditches operate when there is high water?

Mr. LANDBY. Well, the ditch is built 6 feet deep, and when the water reaches the level of the lake it stops.

Mr. STEENERSON. Does it flow back into the ditch?

Mr. LANDBY. Yes; and the washings generally go in the ditch. There is a whole lot of clay and stone that washes on the banks of the ditch and that stops.

Mr. STEENERSON. There is no current in it?

Mr. LANDBY. It is half full now, and it was completed after the 4th of July, and I expect if conditions prevail as they are now it will be upside down—

Mr. STEENERSON. Will you state whether that backwater destroys the current in the ditch?

Mr. LANDBY. Yes.

Mr. STEENERSON. How far does that ditch go back in the country?

Mr. LANDBY. It extends 3 miles south and four and a half miles east.

Mr. STEENERSON. When was it built?

Mr. LANDBY. It was completed in July.

Mr. STEENERSON. This year?

Mr. LANDBY. Yes.

Mr. STEENERSON. When was it started?

Mr. LANDBY. As soon as the frost was out.

Mr. STEENERSON. In the spring of this year?

Mr. LANDBY. Yes.

Mr. STEENERSON. The same as the other ditch?

Mr. LANDBY. Yes; that was started as soon as the frost was out.

Mr. STEENERSON. How is the general character of the country back of the lake beyond you? Is it generally flat?

Mr. LANDBY. It is not very flat; it is quite a slope. It is a slope—well, take from the railroad tracks to the lake, I think it is about 23 feet, but on the last mile, that run in front of my house, I think your maps will show you, from the contour lines, that there is nearly 6 feet fall on the last mile.

Mr. STEENERSON. To the original low level?

Mr. LANDBY. That is to the lake shore.

Mr. STEENERSON. To the original lake shore?

Mr. LANDBY. Yes.

Mr. STEENERSON. The natural shore?

Mr. LANDBY. Yes.

Mr. STEENERSON. Of course, when the water comes up 6 feet down there, the whole slope of the ditch is affected accordingly?

Mr. LANDBY. Yes. The consequence is that if there is 2 feet of lake water that is assessed on this, there will be very little left to pay ditch taxes with.

Mr. STEENERSON. Do you pay ditch taxes?

Mr. LANDBY. Yes.

Mr. STEENERSON. How much are you assessed on ditch taxes?

Mr. LANDBY. Well, it is \$40 to 40 acres.

Mr. STEENERSON. A dollar an acre?

Mr. LANDBY. Yes.

Mr. STEENERSON. How much do you pay in taxes?

Mr. LANDBY. This year I pay something over \$160.

Mr. STEENERSON. That includes school taxes?

Mr. LANDBY. Yes; real estate and personal.

Mr. STEENERSON. Have you noted any of the creeks or streams flowing into the Lake of the Woods in that neighborhood? There are some?

Mr. LANDBY. Yes.

Mr. STEENERSON. How does this high water affect those streams?

Mr. LANDBY. It affects them in the same way as it affects this ditch.

Mr. STEENERSON. Describe it.

Mr. LANDBY. Well, when the current of the ditch meets the current of the level of the lake it stops and kind of fills up.

Mr. STEENERSON. Does it stop the current?

Mr. LANDBY. Yes; it stops the current further on. We have quite a big rainfall here, so that the creeks are full. For instance, the level of the lake is on contour line 1062; the water in the creek will be held back, so that it will go quite a bit beyond that.

Mr. STEENERSON. Will it cause any damage to the surrounding country when the outlet is stopped up like that?

Mr. LANDBY. Yes; it seems so to me.

Mr. STEENERSON. How does it affect the water in the stream?

Mr. LANDBY. It gets sluggish and slimy and unfit for cattle to drink.

Mr. STEENERSON. How as to weeds?

Mr. LANDBY. Cat-tails grow up.

Mr. STEENERSON. Before the obstruction was it different?

Mr. LANDBY. Well, it was different when I came here.

Mr. STEENERSON. How was it then? Was there a current and clear water?

Mr. LANDBY. Well, yes; more so; yes.

Mr. STEENERSON. Have you noticed particularly the Warroad River?

Mr. LANDBY. Yes.

Mr. STEENERSON. As it enters the lake here?

Mr. LANDBY. Yes.

Mr. STEENERSON. How has it affected it?

Mr. LANDBY. Well, it affected it away back in our township.

Mr. STEENERSON. How many miles?

Mr. LANDBY. It affected it up in section 5, in the town of Miranville, the same town I have described.

Mr. STEENERSON. Have you observed whether there is any additional grass and weeds growing up in it?

Mr. LANDBY. Yes.

Mr. POWELL. Section 5 is on the Warroad River?

Mr. STEENERSON. Yes; I am speaking of the Warroad River. Before that there was a current and clear water?

Mr. LANDBY. Yes.

Mr. STEENERSON. Have you any property in town here?

Mr. LANDBY. I have one lot.

Mr. STEENERSON. Is there any building on it?

Mr. LANDBY. No; I just got it this spring.

Mr. STEENERSON. In your school district or township, since this high water has been there, have you gained or lost any settlers?

Mr. LANDBY. Right in my school district? You mean the last year?

Mr. STEENERSON. The last two or three years, since the high water.

Mr. LANDBY. Well, we have had high water quite a long time back.

Mr. STEENERSON. I thought you mentioned that somebody had given up——

Mr. LANDBY. That is not in our district; it is 6 miles farther up; a gentleman gave up hopes and went farther on.

Mr. STEENERSON. He had to abandon his place on account of the water?

Mr. LANDBY. Yes.

Mr. STEENERSON. Are there many in that vicinity that abandoned it?

Mr. LANDBY. In the last 14 years, in the latitude where I live, they have all went, except McGaherty's and me, who have some land a little higher, so that they could not go.

Mr. STEENERSON. A good many have abandoned their land on account of the water?

Mr. LANDBY. Yes.

Mr. GLENN. In the last 14 years, you say?

Mr. LANDBY. Yes.

Mr. POWELL. Does he know of his own knowledge?

Mr. STEENERSON. Can you name them?

Mr. LANDBY. William St. Louis.

Mr. STEENERSON. Where did he live?

Mr. LANDBY. Right in Warroad.

Mr. STEENERSON. Where?

Mr. LANDBY. In section 2.

Mr. TAWNEY. Adjoining you?

Mr. LANDBY. Yes; I think they adjoined me, and there is quite a few more that left.

Mr. TAWNEY. Where?

Mr. LANDBY. One below me; I do not remember the name; he did not stay long; he got disgusted.

Mr. STEENERSON. Did you know Mr. May?

Mr. LANDBY. Yes; Tom May and Rose Humble was the name of his wife before he got married.

Mr. STEENERSON. What became of him?

Mr. LANDBY. He left for North Dakota.

Mr. STEENERSON. Abandoned the claim?

Mr. LANDBY. Yes. He came in with a whole lot of stock and discovered the land was flooded, and they left.

Mr. STEENERSON. If it were not for this trouble about high water, what would you say of the prospects of your neighborhood for land being taken up and settled and developed?

Mr. LANDBY. It would be all used.

Mr. ROCKWOOD. What is the highest price at which you have known farms to sell in your neighborhood?

Mr. LANDBY. There has not been any sold in my neighborhood lately.

Mr. ROCKWOOD. What is the highest price you have known farm lands to sell in Roseau County?

Mr. LANDBY. I have known of lands sold a mile from my corner at \$100 an acre.

Mr. ROCKWOOD. Where?

Mr. LANDBY. At Swift.

Mr. ROCKWOOD. At the town of Swift?

Mr. LANDBY. No; no town; just farm.

Mr. ROCKWOOD. How much land?

Mr. LANDBY. There was 2 acres, and they gave \$100 an acre.

Mr. POWELL. Never mind 2 acres. There might be some special reason for buying 2 acres. Give us a farm. What would a farm bring per acre?

Mr. LANDBY. There have been no farms sold.

Mr. ROCKWOOD. What was the description of the land that sold at \$100 an acre?

Mr. LANDBY. That is on the northeast corner of section 13, in the same town as I have described.

Mr. ROCKWOOD. Two acres?

Mr. LANDBY. Two acres to one man and one to another one.

Mr. ROCKWOOD. Take a farm of 160 acres or 80 acres, what is the best price you have known to be paid?

Mr. LANDBY. There has not been any sold in my neighborhood.

Mr. ROCKWOOD. Anywhere in Roseau County?

Mr. LANDBY. That I have not followed.

Mr. ROCKWOOD. Do you know of any sales?

Mr. LANDBY. No; I am not in the land business, so that I do not pay much attention to that.

Mr. ROCKWOOD. But you have given values as if you knew. Do you know of any sales?

Mr. LANDBY. No; not so that I could testify right out.

Mr. ROCKWOOD. When you say your land would be worth \$100 an acre except for the effect of the water on it, do you say that basing it on any sales that you knew of or have heard of, or is it simply your estimate?

Mr. LANDBY. That is my own estimate, and I base it on the quality of the soil and the production thereof.

Mr. ROCKWOOD. On the four tons of clover to the acre?

Mr. LANDBY. Yes; and another crop on top of it.

Mr. ROCKWOOD. On what you are actually producing?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. And that is what you have produced here?

Mr. LANDBY. Yes; and I have produced flax, 20 bushels to the acre, and on 50 acres one year I can come up to the value of 6 per cent on the value of \$100 an acre for that.

Mr. ROCKWOOD. In what year did you raise the flax crop you speak of?

Mr. LANDBY. That is the same year as I sent the letter to this commission.

Mr. ROCKWOOD. 1912?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. At what rate of interest do you figure it?

Mr. LANDBY. 6 per cent.

Mr. ROCKWOOD. You mean you get \$6 an acre over and above expenses?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. And you lived on that land since 1898; 17 years?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. And you are a pretty active man in your neighborhood and in the community, are you not?

Mr. LANDBY. Well, I do all I can.

Mr. ROCKWOOD. You are pretty energetic?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. You keep pretty well informed?

Mr. LANDBY. Well, I read the daily paper when I have time.

Mr. ROCKWOOD. I am talking of your neighbors; and you have never heard the price at which a farm of 80 acres or more has been sold?

Mr. LANDBY. Not in my neighborhood.

Mr. ROCKWOOD. Anywhere in Roseau County? Do you know Roseau County?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. Do you know how big it is?

Mr. LANDBY. Probably 50 townships.

Mr. ROCKWOOD. Do you know of a farm being sold anywhere in Roseau County?

Mr. LANDBY. I could not say right out so that I could mention the parties, but I have heard of sales.

Mr. ROCKWOOD. You can not identify one and tell where the farm is and who bought it or sold it and what the price was?

Mr. LANDBY. No.

Mr. ROCKWOOD. On how many acres of land did you pay taxes this year?

Mr. LANDBY. I pay taxes on what I have mentioned with the exception I think it is 4 acres, taken out for right of way for the Canadian Northern, otherwise it is 480 acres.

Mr. ROCKWOOD. And your taxes are how much?

Mr. LANDBY. Well, it runs from round \$40 a quarter and then the personal property tax besides.

Mr. ROCKWOOD. \$40 a quarter?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. Did you pay \$480 taxes—a dollar an acre?

Mr. LANDBY. \$40 a quarter.

Mr. ROCKWOOD. You general taxes were about \$120, of \$480 taxes, and your ditch assessment besides; is that right?

Mr. LANDBY. Well, this year I had to pay the ditch tax; this is a personal property tax; we have different taxes from what you have.

Mr. ROCKWOOD. Take the land alone, it would be about \$120 real estate taxes?

Mr. LANDBY. Yes, I think it is \$43.50, some of it, and some of it about \$40, and so on.

Mr. ROCKWOOD. Do you know what the tax rate is; how much on the dollar?

Mr. LANDBY. I could not tell you that, except I looked it up.

Mr. ROCKWOOD. Do you not know how much it is? Four or five or six mills on the dollar?

Mr. LANDBY. Well, I may know what the mill on the dollar is for school taxes, but I could not say right out what the road and bridge and general taxes we had was.

Mr. ROCKWOOD. Do you know what the assessed value of your farm of 480 acres is?

Mr. LANDBY. No, I do not.

Mr. ROCKWOOD. You do not know anything about it?

Mr. LANDBY. No.

Mr. ROCKWOOD. You have not paid any attention?

Mr. LANDBY. No.

Mr. ROCKWOOD. You do not know whether it is assessed at \$5 an acre or \$20 an acre?

Mr. LANDBY. I could let you know by looking it up, but I could not answer it intelligently now under oath.

Mr. ROCKWOOD. You do not know?

Mr. LANDBY. No.

Mr. ROCKWOOD. When you say you get 10 to 16 dollars a ton for hay, that is baled hay?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. Loaded on the cars?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. When did you begin raising cultivated crops?

Mr. LANDBY. About seven or eight years ago.

Mr. ROCKWOOD. Prior to that time what were you doing?

Mr. LANDBY. I was raising stock and cutting wild hay.

Mr. ROCKWOOD. Did you do any work off from your farm?

Mr. LANDBY. Yes; in the early days I used to go to the woods in the wintertime.

Mr. ROCKWOOD. About seven or eight years ago you began cultivating crops?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. Are these cultivated crops you have spoken of—4 tons to the acre of clover, and the other figures you have given us; I do not remember exactly what they were—are they fair average crops?

Mr. LANDBY. It is a fair average if the land is in condition to raise a crop on.

Mr. ROCKWOOD. What do you mean by that?

Mr. LANDBY. That is if there is drainage.

Mr. ROCKWOOD. Taking the years just as they have been, are these average crops?

Mr. LANDBY. At some places; you realize that some parts is better drained than others on a farm, although the quality of soil is just as good in one place as the other.

Mr. ROCKWOOD. What is the difference?

Mr. LANDBY. If the drainage is not complete you can not raise a clover crop.

Mr. ROCKWOOD. That is all the difference?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. How many acres of clover did you have?

Mr. LANDBY. You mean of clover alone, or mixed clover and timothy?

Mr. ROCKWOOD. Yes; give both.

Mr. LANDBY. Nearly 100 acres.

Mr. ROCKWOOD. How much did you cut in the 100 acres?

Mr. LANDBY. I cut 200 tons.

Mr. ROCKWOOD. How much of that was in section 3?

Mr. LANDBY. You mean timothy and clover?

Mr. ROCKWOOD. Yes; how much of the 100 acres was in section 3?

Mr. LANDBY. Forty-two acres.

Mr. ROCKWOOD. How large is the consolidated school district?

Mr. LANDBY. It is three-quarters of a township.

Mr. ROCKWOOD. How many children?

Mr. LANDBY. We had 54 in the room last.

Mr. ROCKWOOD. Is that school at Swift?

Mr. LANDBY. It is on the northwest corner of section 18 in town——

Mr. ROCKWOOD. Does the school district include Swift?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. That is a very small place?

Mr. LANDBY. It is only a station and a store; there are no residences there.

Mr. ROCKWOOD. When was it consolidated?

Mr. LANDBY. It is four years ago, I think; I could not say right out.

Mr. ROCKWOOD. Is your land worth more than your neighbors' land in that district?

Mr. LANDBY. Well, the quality of land is just about the same.

Mr. ROCKWOOD. Is yours better cultivated?

Mr. LANDBY. Right through it is; of course, there is some cultivated as highly, but I have more of it.

Mr. ROCKWOOD. But aside from your greater skill and industry and cultivation, the rest of it is just the same?

Mr. LANDBY. It is the same quality of soil?

Mr. ROCKWOOD. Is it worth \$100 an acre?

Mr. LANDBY. It is worth that to me.

Mr. ROCKWOOD. Do you know what the market value is?

Mr. LANDBY. Well, I do not base it on any market value. I base it on what I produce on it and the quality of the soil, and I base it on the quality of the soil more so, because my boys have taken a sample of it to the agricultural school and tested it themselves, and came back and said it was the best soil in the State of Minnesota, and that alone is \$50 an acre to me——

Mr. ROCKWOOD. I want you to realize just exactly what it means when you say you do not base this at all on market values. Do you mean that you do not take into consideration at all the price at which it can be bought or sold?

Mr. LANDBY. Well, I would not like to sell it unless I am forced to.

Mr. ROCKWOOD. Do you mean you do not take into consideration the price at which land can actually be bought and sold?

Mr. LANDBY. All I can say about it men came up and wanted to give me \$50 an acre for it, and I told them it was not for sale. That is the only means I have to explain that it would not be the commercial value, as I was not selling.

Mr. ROCKWOOD. I wish you would answer my question exactly. Do you arrive at that figure that you place as the value of the land without reference to the price at which lands could actually be bought and sold?

Mr. LANDBY. I base it on the theory that if I should buy a farm——

Mr. ROCKWOOD. I want you to answer my question.

Mr. STEENERSON. Let him finish his answer. It is assuming a good deal for a water power company to come in here and assume full control of a witness, and ask all sorts of questions, and not allow the witness to complete his answer, and taking advantage of him by breaking him off before he finishes his answer.

Mr. ROCKWOOD. The witness has given the kind of answer the Congressman contends for three or four times, and I did not object. If he wishes to give the same kind of answer again, and my learned friend wishes to hear it, I do not.

Mr. TAWNEY. Complete your answer.

Mr. LANDBY. I base it on the theory that if I should go out and buy a farm with equally as good quality of soil and a location with reference to consolidated schools and railroad facilities and markets I can not duplicate it for \$100 an acre.

Mr. ROCKWOOD. You say if you go out and buy; what do you mean by going out and buying?

Mr. LANDBY. Well, if I should try to find out land prices, I would have to go and ask to buy, would I not?

Mr. ROCKWOOD. You mean go out of this neighborhood or buy in this neighborhood?

Mr. LANDBY. I would have to find land that would suit me and my family and then try to buy.

Mr. ROCKWOOD. Do you mean in the same neighborhood or somewhere else?

Mr. LANDBY. That is awful hard to answer.

Mr. POWELL. Do you not think you are taking up time for little purpose, because he says he does not know what he can get land for and what he can sell at? Out of nothing nothing can come.

Mr. STEENERSON. Under the rules of evidence a man who lives on a farm is a competent witness as to its value, and he is not giving evidence as a real estate man. They can call such men, and they can give expert evidence. He farms his land and produces his crop and sells it, and it is the very best evidence, and it is a great deal better than other evidence. You can get opinion evidence. You can get a horse valued at from \$5 up to \$1,000.

Mr. POWELL. Do you not think you are mixing up valuation with compensation? What you might call the value would be what it is worth to the man.

Mr. STEENERSON. There are a great many things that have not a market value.

Mr. POWELL. I am with you so far; you are trying to convince me that I am wrong.

Mr. STEENERSON. Then I am through.

Mr. ROCKWOOD. Who were the purchasers of the little parcels that you speak of at Swift, 1 acre and 2 acres?

Mr. LANDBY. Peter Flow and his step-father.

Mr. ROCKWOOD. They bought them for garden lots?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. Small places?

Mr. LANDBY. I think Peter Flow is raising celery on his.

Mr. ROCKWOOD. They are near Swift Station?

Mr. LANDBY. Yes; just a mile from mine.

Mr. ROCKWOOD. Not for farm purposes?

Mr. LANDBY. Flow is farming every inch of his.

Mr. ROCKWOOD. When did you first see the water up as high approximately as it has been the last two or three years?

Mr. LANDBY. In 1907.

Mr. ROCKWOOD. That is when it was first up?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. Was it not up pretty nearly as high as that in 1898?

Mr. LANDBY. In 1899 it was.

Mr. ROCKWOOD. And it has not varied very much from 1898 and 1899 until the present time?

Mr. LANDBY. Yes, it has varied very much. I have taken up 30 ton of wild hay that I have not been able to cut for the last three years.

Mr. ROCKWOOD. Has it varied much more than the lakes and streams usually vary?

Mr. LANDBY. It is hard to determine, because the water falls off inch by inch, and it is hard to determine in the grass how it was.

Mr. ROCKWOOD. Is the amount of variation up and down unusual in a lake of that size?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. You filed in November, 1898?

Mr. LANDBY. Yes; the 16th November.

Mr. ROCKWOOD. And the water then was almost as high as it was to-day?

Mr. LANDBY. I did not know anything about any gauge and did not know where Rat Portage was.

Mr. ROCKWOOD. That was on the south shore of the Lake of the Woods?

Mr. LANDBY. Yes.

Mr. ROCKWOOD. How much lower was it then than it is to-day?

Mr. LANDBY. As near as I can inform you, I was plastering my house, and I came to Warroad for sand, and I took a row boat and filled up the sand on Sandy Island, and there were trees on Sandy Island at that time.

Mr. ROCKWOOD. Was the water a foot lower than it is to-day?

Mr. LANDBY. I could not say, but I was up on that island and that is the finest kind of sand for plastering, and that is the nearest point I could find sand for plastering.

Mr. ROCKWOOD. You do not know whether it was as much as a foot lower?

Mr. LANDBY. I could not say.

Mr. ROCKWOOD. Do you know whether it was six inches lower?

Mr. LANDBY. I could not say.

Mr. ROCKWOOD. Will you say positively it was one inch lower?

Mr. LANDBY. That is a question I can not answer, because it is now 20 years ago.

Mr. BERKMAN. I do not know that this has anything to do with determining the value of the man's land. If this man is entitled to

anything, he is entitled to the natural level of the lake, and if the lake was at that time above its natural level, by reason of the operation of the dam at Kenora, or Keewatin, even though he did file, he was entitled to the protection of the Government and to the water not being on his land.

Mr. TAWNEY. If the level of the lake at the time he bought the land was practically the same as it is at the present time, I think it would have a material bearing upon his testimony as to the amount of damage he has sustained in consequence of any level above or below that which obtained when he purchased.

Mr. POWELL. The Congressman went into this without any objection on your part and opened the door to you, but that is a very technical rule to apply.

Mr. ANDERSON. That is a question we can not decide off-hand.

Mr. POWELL. You had better not object, I think.

Mr. STEENERSON. I am not objecting.

Mr. MIGNAULT. Mr. Rockwood has the right to cross-examine.

Mr. TAWNEY. We have the exact figures as to the level of the lake at the time of the purchase of the land, and that fact will be taken into consideration by the commission in determining the result of any change in level the commission may hereafter recommend.

Mr. ROCKWOOD. That is true; but I think my questions were entirely proper for the purpose of getting at the accuracy of the memory of this witness, if for no other reason. Are you able to tell me, Mr. Landby, how many seasons since 1898 the water has been at the stage at which it is to-day, or substantially at that stage, or how many seasons it has failed to come up to that stage?

Mr. LANDBY. You mean to-day or at a higher stage of the season?

Mr. ROCKWOOD. Take it to-day.

Mr. LANDBY. I have not watched the gauge to-day, but I think it is—

Mr. TAWNEY. What is the gauge reading to-day?

Mr. MEYER. Last night it was practically 7 feet; 1,060.7.

Mr. LANDBY. You realize that it is quite a question to answer right off, for a man working on the land, to go up and down mowing, and to answer by the fraction of an inch—it is hard to answer.

Mr. ROCKWOOD. If you can not, say that you can not. I do not want you to undertake to give an answer you can not give.

Mr. LANDBY. Well, as far back as 15 years, if you would permit me to use certain instances which I remember, like when I took the sand, on a place where I can call my memory to, I would answer; but otherwise I would be unable, because it is hard to remember all these things, and you will admit that.

Mr. ROCKWOOD. I understand it would be impossible to answer to a fraction of an inch; I realize that; but are you able to tell how many seasons it has, at some time during the season, been up to the present level and when it has not?

Mr. LANDBY. I will admit that in 1907 it was still higher than it has ever been this season; it was closer to my buildings than ever it was this year.

Mr. ROCKWOOD. And that is as much information as you can give in answer to the question?

Mr. LANDBY. Yes; you have the levels given by the engineers. It is pretty hard to measure in the grass; it would not be accurate anyway.

Mr. ROCKWOOD. If we had relied entirely upon the engineers, we would not have required you to testify at all.

Mr. GLENN. That dam was built in 1894?

Mr. LANDBY. I could not tell you when.

Mr. GLENN. You moved there in 1898?

Mr. LANDBY. Yes.

Mr. GLENN. What years, after 1898, up to the present time, did you make your best crop? Just give the best crops you made after you got this land.

Mr. LANDBY. It is pretty hard to remember.

Mr. GLENN. It seems to me necessary, in order to throw light on your damages. What year did you make your best crop? What year did you make the 71 bushels of oats to the acre?

Mr. LANDBY. I know it must have been a lower lake level.

Mr. GLENN. What year was it? Fix the year and we will fix the lake level.

Mr. LANDBY. Well, I have the figures and I could not make a mistake.

Mr. GLENN. You say one year you made 71 bushels of oats to the acre, and over 20 bushels of wheat to the acre, and 4 tons of clover?

Mr. LANDBY. Yes.

Mr. GLENN. What year was that?

Mr. LANDBY. The biggest crop of clover I had was this crop.

Mr. GLENN. When was that 71 bushels of oats to the acre?

Mr. LANDBY. Five years ago.

Mr. GLENN. That would be 1910?

Mr. LANDBY. Yes.

Mr. GLENN. You say that particular land is worth how much an acre now?

Mr. LANDBY. It is worth \$100 an acre.

Mr. GLENN. It is worth \$100?

Mr. LANDBY. That is, provided I can work it to the full capacity.

Mr. GLENN. What would you take for it now, \$100 an acre?

Mr. LANDBY. I am not wanting to sell it.

Mr. GLENN. If you were selling it, what is it worth to-day?

Mr. LANDBY. I have stated that.

Mr. GLENN. \$100 an acre?

Mr. LANDBY. Yes.

Mr. GLENN. Was it ever worth more than that?

Mr. LANDBY. Just on the same conditions, I have not had any offer for it of \$100 an acre; I have not had it valued.

Mr. GLENN. You say your farm has depreciated \$20,000. If it is worth \$100 an acre now and has depreciated \$20,000, the land must have been worth at some time more than \$100 an acre.

Mr. LANDBY. I have already stated that the land submerged has no value at all.

Mr. STEENERSON. Three-quarters of one-quarter and 40 acres of another.

Mr. MAGRATH. Is it your contention your your land would be worth \$100 an acre if it were in the condition it was when you filed on it?

Mr. LANDBY. Yes, and I could operate it the best I can——

Mr. MAGRATH. And when you filed on it you excluded certain portions in the northwest and northeast corner?

Mr. LANDBY. Well, it was filed before some of them, but I excluded one-quarter on account of it being a watercourse.

Mr. MAGRATH. The reason you excluded the 40 acres was because it was affected by the waters of the lake?

Mr. LANDBY. No; it was a kind of grade from the inland country; it was a watercourse.

Mr. POWELL. What you excluded was covered with water?

Mr. LANDBY. No; it was not water there, but there were some bad looking willow bushes on it, and I did not like it.

Mr. ROCKWOOD. How long have you owned the quarter section in 3?

Mr. LANDBY. I could not say the year without looking it up. I have owned it 8 or 10 years.

Mr. ROCKWOOD. How much did you pay for it?

Mr. LANDBY. I think I paid \$1,300 for it.

Mr. ROCKWOOD. That is a little over seven and a half an acre.

Mr. GLENN. You say that large crop was got in 1910?

Mr. LANDBY. I think so.

Mr. GLENN. That reading now shows 1,060?

Mr. LANDBY. Yes.

Mr. GLENN. And the reading to-day is 1,060.6?

Mr. LANDBY. It has been higher than that this season.

Mr. GLENN. In July of that same year it was 1,059, and in August 1,058, October 1,058, and November 1,057; that is the year you made the best crop?

Mr. LANDBY. Well, I may be mistaken.

Mr. STEENERSON. I suppose you did not raise the best crop on the land that had been submerged; you raised it on the higher land?

Mr. LANDBY. Well, this is east of the buildings, and it has been in grass ever since.

Mr. ROCKWOOD. You said you paid \$1,300 for 160 acres. Have you ever known a piece of land selling in your neighborhood at any higher price than that?

Mr. STEENERSON. That is 10 years ago.

Mr. LANDBY. Should I answer for the whole neighborhood?

Mr. ROCKWOOD. Have you ever known of a piece of land selling for any more, except the little fraction of land in Swift?

Mr. LANDBY. Well, the Coulson's lot there, about the same time—I do not remember exactly what they paid; I think they paid \$1,600.

Mr. ROCKWOOD. That is \$10; that is the highest you can think of?

Mr. LANDBY. There has not been any sold since.

Mr. ROCKWOOD. I want you to state distinctly, if you can recall anything higher than \$10 an acre that you know about?

Mr. LANDBY. Referring to 10 years ago?

Mr. TAWNEY. Any time within the last 10 years, the last year, or this year, or any time within 10 years?

Mr. STEENERSON. The Albert Berg farm sold within the last 10 years.

Mr. LANDBY. Yes; but I do not know what he got for it.

Mr. STEENERSON. I guess he got more than that—no; I am mistaken.

Mr. ROCKWOOD. He asked \$40 and could not get it.

Mr. STEENERSON. Mr. Berkman tells me he sold it for \$60 an acre.
Mr. ROCKWOOD. The witness has not told us of anything higher than \$10.

Mr. POWELL. He has told us that a dozen times. You say you first commenced active work in cultivating the land there about four or five years ago?

Mr. LANDBY. No; I think seven or eight years ago.

Mr. POWELL. Where did you commence at that time?

Mr. LANDBY. I commenced near the building.

Mr. POWELL. Did you extend far to the north?

Mr. LANDBY. Yes; I extended north.

Mr. POWELL. As far as your cultivated portion extends now?

Mr. LANDBY. No; at one point it was first broken; that year I had flax on; it was all cleared before—

Mr. POWELL. When did you first commence to cultivate the northern portion of what you have cultivated?

Mr. LANDBY. That would be about four years ago.

Mr. POWELL. I am going to call your attention to a state of facts that almost convinces me—and I would like you to explain it—that you commenced four years ago, for the simple reason that you could not commence before. Now, looking back at the records in 1899—that is the year after you moved there—the water in the summer time was up to 62; that is four-tenths higher than it has been any time this year. Now, that high water, slightly diminished, continued from that time, with the exception of two or three years, for which I can not speak, because the record is not here, but according to the records of the War Office of the United States high water continued down to 1911, when it fell from 60 to 57—dropped 3 feet—and then it was that you commenced the cultivation of the northerly portion.

Mr. LANDBY. I will explain that. I had been communicating with the Secretary of State with regard to the water, and he informed me that a commission had been appointed to take care of the water, and I thought it would be all right, and I felt so glad that I thought everything was all right, and I built a house for three or four thousand dollars.

Mr. POWELL. Up to that time the land was not such as could be cultivated by you? I am speaking of the northern portion.

Mr. LANDBY. On the northern portion I cut hay on it.

Mr. POWELL. That is, wild hay?

Mr. LANDBY. Yes.

Mr. POWELL. It did not require any cultivation to cut wild hay?

Mr. LANDBY. Yes; as I stated to the engineer, I rolled off stumps and things from that land.

Mr. POWELL. 1911 and 1912 were exceptionally low years?

Mr. LANDBY. Yes.

Mr. TAWNEY. How much Government land is there between you and the lake now?

Mr. LANDBY. Well, there is not a full quarter.

Mr. TAWNEY. Not a full quarter?

Mr. LANDBY. It is not a full half a mile. It was not washed in when I filed on my homestead; it was a full quarter filed in the next section—

Mr. TAWNEY. I think this plan shows some Government land between you and the lake?

Mr. LANDBY. Yes.

Mr. POWELL. I suppose your reason for not buying that land between you and the lake was that it was not worth buying?

Mr. LANDBY. They built a homestead on it there, and when they got 3 feet of water on it they got cold feet and left. It has been all filed on, and they have buildings on it.

Mr. TAWNEY. There is a filing on a portion here on the plan.

Mr. WYVELL. Was this place filed on?

Mr. TAWNEY. This land was filed on—the land in the north half of section 1. When was it filed on?

Mr. LANDBY. Some few years ago.

Mr. POWELL. That land out there is worth nothing?

Mr. LANDBY. It is worth nothing when there is 3 or 4 feet of water on it.

Mr. POWELL. As matters stand, the land between your land and the lake is worth nothing?

Mr. LANDBY. Under present conditions, and a whole lot of mine, too.

Mr. POWELL. I have not a record of the year you bought from the Government office, but the following year shows that the outside boundary of your land, and for some distance inside of the outside boundary of the land—meaning by the outside boundary the north boundary—that Mr. Landby was 2 feet under water.

Mr. LANDBY. Yes.

Mr. POWELL. When you bought it?

Mr. LANDBY. No; not in the fall, when I bought it, but the next year. I found out later they put in the stop logs during the winter, and, what clearing I had, it had water that high.

Mr. MAGRATH. What induced that man to file on that land when it was in that condition? The land north of you was filed on, you say, a few years ago. Did the man who filed on it not know that it was land that was flooded very frequently?

Mr. LANDBY. It did not seem so. This man was a harness maker, Mr. Warne. He was a cripple, too, and he hired men and built a house, and I told him it was in such a condition, and it was likely to occur, but he insisted on it, and he gave it up afterwards.

Mr. POWELL. This year there was none of your land actually covered with water.

Mr. LANDBY. I have stated three-fourths of it. That place we have a picture of is all covered this year.

Mr. GLENN. Three-fourths of it covered at 1,060?

Mr. LANDBY. Yes; at 1,062.

Mr. POWELL. One thousand and sixty-two does not give you one-half of it, let alone three-quarters.

Mr. LANDBY. Well, it goes pretty close to the top end of it. It is wet, and you meet the lake level. It is very hard to determine exactly. Say, for instance, the creek is coming down and meets the lake level, the section of the creek or ditch don't run out, and it spreads all over. It is an awfully difficult matter to explain exactly to the inch out in the grass, as I have already stated.

Mr. POWELL. We have to consider these matters, and we have the scientific evidence absolutely before us, that there was not nearly

one-half of your land ever flooded at any time this year, and you tell us there was three-quarters. Of course, I am not impeaching your integrity.

Mr. STEENERSON. Is it the fact that the soil beyond the land where the water came was actually saturated and soaked for rods?

Mr. LANDBY. Yes; and I had a mower and was going to cut hay on it, and it did not stand in the water, but when you put the mower on it it presses down 6 inches.

Mr. STEENERSON. The line of submergence does not measure the area of land unfit for cultivation by reason of the water.

Mr. LANDBY. No; not only that, but not even grass land.

Mr. STEENERSON. It soaks in?

Mr. LANDBY. Yes.

Mr. POWELL. That is correct, but that is not the point. I was asking about the land actually submerged, not the seepage.

Mr. LANDBY. It is very hard to tell where it is submerged and where you can not use it.

Mr. POWELL. But you can tell where you saw water on the land and where you did not?

Mr. LANDBY. Yes.

Mr. STEENERSON. I think if the commission would walk over on that land they would appreciate it. You do not have to go to the water line to find the mud.

Mr. POWELL. I simply asked him what portion of his land was submerged.

Mr. STEENERSON. He referred to the amount of his land destroyed for cultivation.

Mr. POWELL. It may be your idea of what he said, but it is not what he said or what I put to him. I am not asking what he said formerly, but what he stated to me.

Mr. STEENERSON. The effect of his evidence was that three-fourths of it was injured by it, but not that it was submerged.

TESTIMONY OF MRS. ANNIE McCAGHERTY, OF WARROAD, MINN.

(Mrs. Annie McCagherty, being duly sworn, testified as follows:)

Mr. STEENERSON. I wish to explain, Mr. Chairman, that Mrs. McCagherty's husband is present but he is very deaf, and as Mrs. McCagherty knows all about the matter, she will testify.

Mrs. McCagherty, you have a farm in the vicinity of Warroad?

Mrs. McCAGHERTY. Yes, sir; we have a farm there.

Mr. STEENERSON. Your husband has lived with you on this farm?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. Your farm is located where?

Mrs. McCAGHERTY. Two and a half miles southeast of Warroad.

Mr. STEENERSON. Can you give the Government description, the quarter section?

Mrs. McCAGHERTY. The southwest quarter of the northwest quarter of section 1; the south half of the northeast quarter of section 2; and the northwest quarter of the southeast quarter of section 2. That is a place we have up on the lake shore. I gave the description of the wrong one. This one is in township 162.

Mr. STEENERSON. You have two places, and this is one of them?

Mrs. McCAGHERTY. Yes.

Mr. STEENERSON. We will let that stand. Now give the other one.

Mrs. McCAGHERTY. The other one is the east half of the southeast quarter of section 33, and the west half of the southwest quarter of section 34, and the east half of the southwest quarter of section 34.

Mr. STEENERSON. How many forties is that?

Mrs. McCAGHERTY. Six.

Mr. STEENERSON. Give the township and range.

Mrs. McCAGHERTY. Township 163, range 36.

Mr. STEENERSON. These are two farms?

Mrs. McCAGHERTY. Yes.

Mr. STEENERSON. One you call the home farm?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. What do you call the other?

Mrs. McCAGHERTY. The St. Louis farm.

Mr. STEENERSON. Why do you call it the home farm?

Mrs. McCAGHERTY. Because we live there.

Mr. STEENERSON. The home farm contains 240 acres?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. And the other, the St. Louis farm, has how many acres?

Mrs. McCAGHERTY. One hundred and sixty.

Mr. STEENERSON. What is the distance between the nearest points from one farm to the other?

Mrs. McCAGHERTY. We call it a mile and a half. It is just about that.

Mr. STEENERSON. When did you first move on this home farm?

Mrs. McCAGHERTY. Ten years ago last March.

Mr. STEENERSON. How long have you had the St. Louis farm?

Mrs. McCAGHERTY. I think we got it about three years later.

Mr. STEENERSON. What was the condition of the land at the time you first got this home farm?

Mrs. McCAGHERTY. It was all wild land; we had to clear it.

Mr. STEENERSON. Was there any growth on it, trees and brush?

Mrs. McCAGHERTY. Yes, sir; there were groves all over it.

Mr. STEENERSON. What kind of trees?

Mrs. McCAGHERTY. Poplar and alder and brush of one kind and another.

Mr. STEENERSON. Was there anything else in the way of obstruction to cultivation besides the trees and brush?

Mrs. McCAGHERTY. Well, the quarter next the lake was rather wet.

Mr. STEENERSON. I am not speaking about that, but was there anything else, any other obstruction, such as stones, that had to be removed?

Mrs. McCAGHERTY. The land was stony after we plowed it.

Mr. STEENERSON. Before you plowed it I suppose it had to be cleared?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. How many acres have you cleared on that home farm?

Mrs. McCAGHERTY. We have cleared about 200 acres.

Mr. STEENERSON. A part of that was not only cleared of brush and timber, but the stone was removed?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. You may state whether or not that was expensive.

Mrs. McCAGHERTY. It was extremely expensive and hard work.

Mr. STEENERSON. Who did most of the work?

Mrs. McCAGHERTY. My husband.

Mr. STEENERSON. Did you also have hired help?

Mrs. McCAGHERTY. Yes; when we could afford it we hired help.

Mr. STEENERSON. You had some hired help?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. After you got the stone and the brush and the trees off you broke it?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. All of those 200 acres?

Mrs. McCAGHERTY. No; some of it has never been broken, but it has been seeded down to timothy and clover.

Mr. STEENERSON. You seeded it to tame grass?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. And the tame grass grew?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. And you have used that for cutting hay?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. How much of these 200 acres has actually been plowed and turned over? I do not expect you to be very accurate.

Mrs. McCAGHERTY. I should say about 150 acres.

Mr. STEENERSON. What kind of crops have you usually been raising or trying to raise on that property?

Mrs. McCAGHERTY. Grain crops—different grains.

Mr. STEENERSON. What varieties?

Mrs. McCAGHERTY. Wheat, oats, barley, and flax.

Mr. STEENERSON. Any rye?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. Any corn?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. What kind—for fodder or for the grain itself?

Mrs. McCAGHERTY. Fodder corn.

Mr. STEENERSON. You had a cultivated garden there?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. Did you raise any potatoes?

Mrs. McCAGHERTY. Lots of them.

Mr. STEENERSON. How much, usually?

Mrs. McCAGHERTY. Well, since my husband has been sick we have not raised many, because he could not take care of them, but before he took sick we used to have several cars every year.

Mr. STEENERSON. How many hundred bushels? Did you raise more than you used yourself?

Mrs. McCAGHERTY. Yes; we had lots to sell.

Mr. STEENERSON. Where did you sell them?

Mrs. McCAGHERTY. One year we sold them to a man, and other years there would be people buying here by the carload, and we would sell to them and ship them out.

Mr. STEENERSON. Do you know how much you got per acre of potatoes?

Mrs. McCAGHERTY. There was one year we got 400 bushels to the acre. That was a particularly good year.

Mr. STEENERSON. Do you keep stock on this farm?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. How many head of cattle?

Mrs. McCAGHERTY. Since my husband has been sick we have not had so many, because we were not able to attend to them. Before that we used to have 12 or 15 head.

Mr. STEENERSON. How long since your husband has been ill?

Mrs. McCAGHERTY. Three years this fall.

Mr. STEENERSON. How many horses did you usually keep?

Mrs. McCAGHERTY. Five work horses.

Mr. STEENERSON. Have you been equipped with farming machinery to run this farm?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. A reaper, a mower, a rake, a hay stacker, wagons, and plows, and horses—all these things?

Mrs. McCAGHERTY. Yes, sir; everything like that.

Mr. STEENERSON. What buildings have you?

Mrs. McCAGHERTY. We have a house, a barn, a large hay barn, a hen house, and a granary—everything that is needed on a farm.

Mr. STEENERSON. Describe your dwelling house.

Mrs. McCAGHERTY. It is a seven-room frame house.

Mr. STEENERSON. Is it painted?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. Has it a shingle roof?

Mrs. McCAGHERTY. Yes, sir; and hardwood floor and finished with birch and stained.

Mr. STEENERSON. Have you any porch?

Mrs. McCAGHERTY. No, sir.

Mr. STEENERSON. Have you any additions or lean-to's?

Mrs. McCAGHERTY. The summer kitchen we use for a woodshed in the winter.

Mr. STEENERSON. Besides these what other buildings have you?

Mrs. McCAGHERTY. We have a milk house.

Mr. STEENERSON. How big is that?

Mrs. McCAGHERTY. About 12 by 15 or something like that.

Mr. STEENERSON. Is that a frame building, too?

Mrs. McCAGHERTY. Yes, sir; they are all frame and painted.

Mr. STEENERSON. How about barns?

Mrs. McCAGHERTY. The barn is 30 by 40.

Mr. POWELL. Mr. Steenerson, is there any point about their being injured by the flood?

Mr. STEENERSON. No; but the idea is that a part of this land, it will appear from the testimony, has been injured by the rise of the lake, and, inasmuch as they have buildings, a residence, a barn, a milk house, and horses, machinery, and equipment to operate this whole farm, when a part of it is rendered unfit to raise crops on it injuriously affects the balance.

Mr. POWELL. On the principle of severance?

Mr. STEENERSON. No; it is a principle of law in this State, and I presume in Canada, that where you buy and exercise the right of eminent domain you must pay not only for the land taken, but for injuriously affecting the remnant. That is the universal rule everywhere where the right of eminent domain is exercised.

Mr. TAWNEY. That is all true, but—

Mr. STEENERSON (interrupting). I am not arguing the question; I am simply explaining the theory.

Mr. TAWNEY. The question is the necessity of taking up the time of the commission by going into all the details that you are when the commission has absolutely no jurisdiction outside of that which is contained in the reference.

Mr. STEENERSON. I am glad you mentioned that. I understand this commission's duties to be these: This reference to this commission says that you must report upon the use of the waters for fishing, for navigation, and for all other purposes practically, and that you must report the value of the land submerged: Now, in view of the treaty and the reference, they must be taken to be in *pari materia* and must be construed together. The word "submerged" does not mean actually under water, because if you put a technical meaning on it it would destroy all the evidence of these engineers. Land that is floating is not submerged. If you use the word "submerged" in the reference it must be understood in the broad sense as affected injuriously by the rise of the level of the water. Whether it sucks through and makes a floating bog of it or sinks down and makes mud is immaterial. You are to determine the value of the land so affected by the water, not for the purpose of paying these people damages. We understand—at least I so explained to all that I met last night—that this commission has not got the authority to award 1 cent of damages to anybody, but you are in an analogous position, as it seems to us, to a board of county commissioners under the drainage laws of Minnesota or of the district court in determining the advisability of a drainage project, for instance. These commissioners are appointed for the purpose of determining two things: What is the cost of the project proposed and what is the benefit to the adjoining land affected. Then the statute says if the total benefit does not exceed the cost of the project it is abandoned.

If you take one of these farms and make a swamp out of a part of it, with mosquitoes in it, you destroy the balance of the farm and you affect the value of the whole.

The commission seems to have the idea that we are going to occupy time with ever quarter section on these maps. We are not able to do that. We are simply bringing some sample cases to show the commission, and it will have to reason by analogy as to the other quarters that are not mentioned. These settlers are not able to come here or hire counsel. They have been drowned out and they are known as "swamp rabbits;" but by taking these that are a little better-to-do and showing what the value of their farms is we enable the commission to see what the value of the property would be by the injurious effect of the raising of the level. We expect to show also by the officers of the town here that the raising of the level stops the sewage, and in order to get rid of it they would have to pump it. All these things we propose to prove, not because we want these people to have damages now, but to show what the pecuniary amount of injury is that is proposed by changing the level of the lake to a certain point. The Governments of the United States and Canada, when the commission's report is submitted, will have these things to settle. Will it be worth while to do all these things for

the sake of producing \$1,250 or \$3,000 or \$10,000 horsepower that might be used somewhere else? That is the question. You have to weigh comparative importance. Is it important that this farm is three-quarters submerged or destroyed, or is it more important that you should have a few more horsepower?

Mr. GLENN. Ten years ago these good people bought that land. At that time there was a dam there. They knew the dam was there. The dam has not been raised, according to the testimony, since that time. Of course, naturally, seepage runs a little here every year, but knowing that there was a dam there these good people put improvements on that land. Do you mean to say that because the land is actually damaged we must take into consideration the amount of money they put into houses, horses, etc.?

Mr. STEENERSON. I will state the reason why.

Mr. POWELL. As I understand the point that you are making or endeavoring to make, it is this: In placing a value upon this land we do not place the value on the land per se, but we place a value on it as part of a going concern.

Mr. STEENERSON. Yes, sir. The land that is proposed to be flooded and destroyed injuriously affects the value of the whole farm.

Mr. POWELL. I think we are all with you on that proposition.

Mr. STEENERSON. I want to answer Commissioner Glenn's question in order that you may all understand our theory. Our theory is that under the laws of Minnesota and every other State in the Union, and I believe under the laws of Canada, certainly under the laws of England, no man has any right to interfere with the natural flow of a stream or the natural level of a lake. That has been the law from time immemorial. I believe Mr. Brown and Mr. Rockwood once served a brief on me in which they made reference to the Book of the Dead, a law book written 4,000 years before Christ, in which it was said, "Thou shalt not pollute the waters of the river;" and that is as good law to-day as it was then.

It has been common history here that in 1895 the honorable Commissioner Lameran, under Grover Cleveland's presidency, sent an inspector of the General Land Office here who reported that these dams had been wrongfully erected across the border and had destroyed and injured a large amount of United States lands. As a result of that he referred the matter to the Interior Department and Mr. Hoke Smith, who was then Secretary of the Interior, reported it to the State Department, from which nothing came. But that has been published in the newspapers and has been the common history of the development of northern Minnesota, that these dams across the line were erected without authority, without their having acquired and paid for the right to overflow the lands, and that eventually the law would be enforced and these interferences with the natural flow of the water would be removed. It being in a foreign country, of course, they could not bring an action. If it had been in North Dakota or South Dakota or Iowa or Wisconsin that the outlet had been, we could have brought an action in the United States court long ago and compelled them to remove this nuisance and allow the natural waters to have their course.

Mr. POWELL. We are all with you in that, but what is the logical coherence?

Mr. STEENERSON. It is this: I was answering Gov. Glenn. He asked what right these people had to go on this land after the unlawful obstruction was put in, and claimed that they had no right.

Mr. GLENN. No; I did not put it that way at all. I asked if they went there and built, knowing that the dam was there, while they could get damage for seepage, if they expected us to add any damages for houses and things of that kind?

Mr. STEENERSON. My answer to that is that relying upon the universal rule that you must not interfere with the natural level of the waters, they had the right to proceed and build their homes there, especially if they did it with due caution, and we shall show that they did it in good faith and that they did not expect the lake would injure them. These people have not built their houses or cleared their lands or plowed their fields for the purpose of collecting damages, and we shall show by the evidence that they have acted in good faith and that, therefore, the commission in reporting to the two Governments must take into consideration the consequence of destroying any part of such farms as these. There are hundreds and thousands of them, but we can only produce a limited amount of evidence. That is the reason I am asking this witness as to the value of the buildings, etc. I was going to follow it up and ask what this farm was worth if the water does not injure it, and what it would be worth if the water takes a part of it and destroys it.

Mr. TAWNEY. Mr. Steenerson, I do not think the commission disagrees with you as to the rule of evidence in respect to the question of value, not only of the land that is actually submerged, but the land that may be affected injuriously in consequence of that which is submerged; but I wanted to call your attention to the fact that under this reference I could not see the necessity for taking up so much time in going into minute details as to the character of the buildings and the crops that are raised on the land.

Question No. 2 of the reference reads as follows:

If a certain stated level is recommended in answer to question 1, and if such level is higher than the normal or natural level of the lake, to what extent, if at all, would the lake, when maintained at such level, overflow the lowlands upon its southern border, or elsewhere on its border, and what is the value of the lands which would be submerged?

Assuming that the observed level during the past 21 years, or since the construction and operation of the dam at Kenora, and the computed natural levels are as they are shown to be in the report of the engineers, and that the commission should recommend the continuance of the present observed level, the land that would be submerged or overflowed and the effect upon that land that remains might be included legitimately in our recommendation as to the value of the land that would be submerged, but it does not seem to me that in order to reach a conclusion as to the value of that land it is necessary to take up so much time in going into such details.

Mr. STEENERSON. Of course, I will yield to the judgment of the commission about that. I will come right to the point then.

Mr. TAWNEY. We want to allow the widest latitude for the purpose of getting at the truth so that we will be able to report the truth to the two Governments, but the question is one of the necessity of taking up too much time as to details. Have the witness proceed and describe her land.

Mr. STEENERSON. Mrs. McCagherty, you have seen these maps and examined them? Assuming that this lake level were in its natural condition, how would your land be then?

Mr. ROCKWOOD. May I ask a question?

Mr. STEENERSON. No; I will not yield to counsel to cross-examine this witness. I believe he should wait until I get through.

Mr. TAWNEY. Mr. Steenerson was examining the witness and was asking her certain questions. I think he ought to be allowed to proceed without interference.

Mr. ROCKWOOD. Objections are usual, and I wanted to——

Mr. TAWNEY (interrupting). Did you wish to make an objection?

Mr. STEENERSON. On that point I would suggest that there being no appeal here, it is only making the witness nervous for counsel to stand here and object. I have not objected in any case except where the witness did not finish an answer or something like that.

Mr. ROCKWOOD. The point I wanted to suggest was this: That term "natural level" has not been defined to me. I have not heard any definition of it, and I am sure the commission does not know what definition the witness would assume.

Mr. TAWNEY. He has assumed the natural levels as shown by the map here.

Mr. STEENERSON. How would your land be, Mrs. McCagherty, if it were in its natural state?

Mrs. McCAGHERTY. There would be no water at all on our home farm.

Mr. STEENERSON. As it has been during the last year or more, how much of it has been affected by the water from the lake?

Mrs. McCAGHERTY. It is nearly all affected.

Mr. MIGNAULT. How is it affected? Is it covered with water?

Mrs. McCAGHERTY. No, sir; not all; but the drainage was so poor—when the water is so high it does not drain off.

Mr. STEENERSON. So that it is not suitable for raising crops?

Mrs. McCAGHERTY. No, sir.

Mr. STEENERSON. Now, when the land was in the former state you have referred to and was not affected by the water, what was the value of your farm per acre?

Mrs. McCAGHERTY. We have not valued it. We were not going to sell.

Mr. STEENERSON. No; it is your home; it is your residence.

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. But after raising the crops and looking after the produce and the money received therefrom, I presume you can state about what the value is.

Mrs. McCAGHERTY. We know how much we make a year and we could estimate it by that.

Mr. STEENERSON. When you get crops on it during the time it is not drowned out you get profits, do you?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. Assuming that it would not be hurt by the water, what do you say is the value of your own land per acre?

Mrs. McCAGHERTY. I would say like Mr. Landby, that it was worth about \$100 per acre.

Mr. STEENERSON. You agree with Mr. Landby?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. When there is high water, as there has been this last spring and summer, what would it be worth?

Mrs. McCAGHERTY. I think we would take \$50 if we were offered it when the lake is threatening us all the time.

Mr. STEENERSON. Did you realize any crops this year?

Mrs. McCAGHERTY. Yes, sir; some.

Mr. STEENERSON. If they should establish a level on the lake so high that it would make all your land wet, then you would say that your land was not worth anything?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. If it is at its present level, how much, about half?

Mrs. McCAGHERTY. The way it is to-day?

Mr. STEENERSON. No; not to-day; but as it has been last season.

Mrs. McCAGHERTY. Yes, sir; \$50 an acre would be a fair value.

Mr. STEENERSON. If it were not for the water it would be worth \$100 an acre?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. So if they should maintain this level as high as it was this last year you would figure that you were damaged \$50 an acre?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. How much would you say you were damaged on the other land under like conditions, this 160 acres?

Mrs. McCAGHERTY. There are 120 acres covered with water.

Mr. STEENERSON. Has that land also been cleared?

Mrs. McCAGHERTY. No, sir; there was only 35 acres cleared up.

Mr. STEENERSON. Do you know how much it cost per acre to clear this land?

Mrs. McCAGHERTY. No; I couldn't say right off.

Mr. STEENERSON. Have you ever figured on that?

Mrs. McCAGHERTY. Yes; but I do not remember now. I am not very good at remembering.

Mr. STEENERSON. Could you look it up and let us know later on?

Mrs. McCAGHERTY. Yes, sir; we have had lots cleared, and I could look it up.

Mr. STEENERSON. You have hired it done?

Mrs. McCAGHERTY. Yes, sir; some of it.

Mr. STEENERSON. So you could tell what it cost per acre to clear it?

Mrs. McCAGHERTY. Yes, sir.

Mr. STEENERSON. In fixing these values upon your land you take into consideration your dwelling and the barn and all these improvements and what you have been using it for?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. Mrs. McCagherty, how long have you lived on the home farm?

Mrs. McCAGHERTY. Ten years.

Mr. ROCKWOOD. Did you take it as a homestead?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. You bought the land?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. Was any of it cultivated then?

Mrs. McCAGHERTY. No, sir; a little was picked up—what we call picked up—the sticks were picked up so you could cut a little wild hay.

Mr. ROCKWOOD. It was not grubbed and farmed?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. What did you pay for it?

Mrs. McCAGHERTY. We just bought 160. We paid \$2,250 for it.

Mr. ROCKWOOD. Were there buildings on the land?

Mrs. McCAGHERTY. No, sir; there were no buildings.

Mr. ROCKWOOD. When did you add to that first 160 acres?

Mrs. McCAGHERTY. The other 80 belonged to my father-in-law. He homesteaded it.

Mr. ROCKWOOD. Did your husband inherit it from his father?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. When was that homesteaded?

Mrs. McCAGHERTY. In 1896 it was filed on.

Mr. MARSCHALK. It was in 1898. I remember that.

Mr. ROCKWOOD. When did you buy the other 160 acres in section 2?

Mrs. McCAGHERTY. In the spring of 1905.

Mr. ROCKWOOD. What did you pay for that?

Mrs. McCAGHERTY. Do you mean the St. Louis place?

Mr. ROCKWOOD. Yes.

Mrs. McCAGHERTY. Excuse me; I am not so sure about that. I think it was in 1908.

Mr. ROCKWOOD. What did you pay for that?

Mrs. McCAGHERTY. I am not sure, but I think it was about \$1,200.

Mr. ROCKWOOD. How long had Mr. St. Louis been on the place?

Mrs. McCAGHERTY. I do not know.

Mr. ROCKWOOD. Is he one of those who have been spoken of as having abandoned their land—gone off?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. Had he put up any buildings?

Mrs. McCAGHERTY. He had a house.

Mr. POWELL. Was this abandonment a sale?

Mrs. McCAGHERTY. No, sir; I can explain that. He was in debt to that extent and we took it up.

Mr. POWELL. That is the way it came to be abandoned?

Mrs. McCAGHERTY. That is the way it came to belong to us.

Mr. ROCKWOOD. He wanted to go away and you bought him out?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. Do you know about how much all the buildings cost?

Mrs. McCAGHERTY. On the home place?

Mr. ROCKWOOD. Yes. You would not know exactly, but if you can, state approximately what they cost.

Mrs. McCAGHERTY. Between \$2,000 and \$2,500.

Mr. ROCKWOOD. Have you put up those buildings and acquired the other place and put under cultivation what you have through your own efforts and from what you have raised on the land?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. When did you first suggest \$100 an acre as the value of your land?

Mrs. McCAGHERTY. I hardly know; just lately, I guess, because we did not intend to sell until we saw that—

Mr. ROCKWOOD. I understand that; but when did you first think it over and express that figure as the value of your land?

Mrs. McCAGHERTY. I could hardly say, but it was quite lately.

Mr. ROCKWOOD. Do you remember to whom you first expressed it?

Mrs. McCAGHERTY. No, sir; to my husband, I suppose.

Mr. ROCKWOOD. Well, have you any recollection of it?

Mrs. McCAGHERTY. No, sir; I do not remember exactly.

Mr. ROCKWOOD. Did you attend the meeting that was held last night?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. Did your husband attend that meeting?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. Had you before that figured as to the value?

Mrs. McCAGHERTY. Oh, yes, sir.

Mr. ROCKWOOD. But you do not remember when?

Mrs. McCAGHERTY. No; not exactly, but it was lately.

Mr. ROCKWOOD. Do you know of any sales yourself of lands in your neighborhood?

Mrs. McCAGHERTY. Two years ago we sold an eighty across the road.

Mr. ROCKWOOD. What did you get for that?

Mrs. McCAGHERTY. Fifteen hundred dollars.

Mr. ROCKWOOD. Was that sold for cash or on time?

Mrs. McCAGHERTY. For cash. That is why we sold it so cheap. We had to have the cash when my husband was sick.

Mr. ROCKWOOD. Do you know of any lands that were sold at a higher price?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. What piece?

Mrs. McCAGHERTY. There is a farm adjoining, down at the Pierson place, that was sold for more than that.

Mr. ROCKWOOD. How much?

Mrs. McCAGHERTY. I couldn't say exactly, because I have forgotten.

Mr. ROCKWOOD. Have you any definite recollection about it at all?

Mrs. McCAGHERTY. I can just tell what we heard at the time—I do not know whether it is true or not—\$7,000.

Mr. ROCKWOOD. For how much land?

Mrs. McCAGHERTY. I do not know how many acres there are in it.

Mr. ROCKWOOD. What was the name of the purchaser?

Mrs. McCAGHERTY. Mr. Pierson.

Mr. ROCKWOOD. Who was the seller?

Mrs. McCAGHERTY. Mr. Headberg, I think.

Mr. ROCKWOOD. Do you remember the description?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. I suppose we can find it.

Mrs. McCAGHERTY. You can find it on the atlas.

Mr. ROCKWOOD. Those names will identify it so we can find it. Do you mean that it adjoins the town of Swift?

Mrs. McCAGHERTY. No, sir; the town of Warroad.

Mr. ROCKWOOD. How does that lie with reference to the lake?

Mrs. McCAGHERTY. It is along the river bank.

Mr. ROCKWOOD. It is not on the lake?

Mrs. McCAGHERTY. No, sir.

Mr. MARSCHALK. It has an elevation above 1,066, I think.

Mr. ROCKWOOD. If you did not know the size of that farm, Mrs. McCagherly, that did not lead you to the conclusion that your land was worth \$100?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. Now, Mrs. McCagherly, when you say that you think yours is worth \$100 an acre, do you mean that you have drawn that conclusion from what you have actually raised from it?

Mrs. McCAGHERTY. Yes, sir; since I have begun to think about it. I did not think about it before.

Mr. ROCKWOOD. You do not try to fix that with reference to any sales, either the sales you have made or the sales that others have made?

Mrs. McCAGHERTY. No, sir. I do not say we could get that much either, because we value it at that because we make an interest of that much every year.

Mr. ROCKWOOD. Are you able to express an opinion as to what you would be able to sell it for, actually sell it for, if you wanted to sell it?

Mrs. McCAGHERTY. Well, there was a buyer at our place three years ago last spring who offered us \$50 an acre and we wouldn't take it.

Mr. ROCKWOOD. Was that for the home property?

Mrs. McCAGHERTY. Yes, sir.

Mr. ROCKWOOD. It did not include the other?

Mrs. McCAGHERTY. No, sir.

Mr. ROCKWOOD. It then, of course, did include the buildings?

Mrs. McCAGHERTY. Oh, yes, sir.

Mr. ROCKWOOD. This 80 acres that you sold, was any part of that cleared?

Mrs. McCAGHERTY. About 10 acres.

Mr. ROCKWOOD. Are you able to say approximately what it cost to clear that property?

Mrs. McCAGHERTY. No, sir; not without thinking about it.

Mr. ROCKWOOD. You may not have investigated. You did not do that work, of course.

Mrs. McCAGHERTY. No; I did not do any clearing work until my husband took sick. Since then I have had to do everything.

Mr. ROCKWOOD. Is there any part of the eighty along the lake or where it is directly affected by the water; the eighty that you sold?

Mrs. McCAGHERTY. No, sir; it is across the road to the south.

Mr. GLENN. Mrs. McCagherly, when did you get your best crops off this land?

Mrs. McCAGHERTY. We always got good crops except one year.

Mr. GLENN. Since you bought it?

Mrs. McCAGHERTY. Since we put it under crops; yes, sir.

Mr. GLENN. Since you bought the land you always got good crops except in one year. What year was that?

Mrs. McCAGHERTY. 1912.

Mr. GLENN. Did you get good crops this year?

Mrs. McCAGHERTY. Yes, sir.

Mr. GLENN. And last year?

Mrs. McCAGHERTY. Yes, sir; except a little that was drowned out.

Mr. GLENN. You say you were offered three years ago \$50 an acre for your land and you refused it?

Mrs. McCAGHERTY. Yes, sir.

Mr. GLENN. Was that because you thought your land was worth more than that?

Mrs. McCAGHERTY. I suppose it was, but we did not want to sell. We were satisfied.

Mr. GLENN. You were satisfied; you were making a good living, and you did not think you were drowned out.

Mrs. McCAGHERTY. We were always drowned out down to the lake.

Mr. GLENN. But not enough to make you want to sell?

Mrs. McCAGHERTY. Not on the home farm. Only the lake is always threatening; we can not make improvements.

Mr. GLENN. What do you mean by "improvements"?

Mrs. McCAGHERTY. We can not put a foundation under our house.

Mr. GLENN. Yet, notwithstanding the fact that you can not make any improvements, you still do not want to sell?

Mrs. McCAGHERTY. Not unless the lake threatens us. If the lake is going to come up, we do not want to live there any more.

Mr. POWELL. You say that there was very little, if any, water that came up on the home place this year.

Mrs. McCAGHERTY. Yes, sir; it came up this year. This year it was extra high. It came up to within 50 yards of the house, I guess, at one time.

Mr. POWELL. How long did that last?

Mrs. McCAGHERTY. It did not last very long; maybe a week.

Mr. POWELL. Then on the St. Louis place; it came pretty generally over that?

Mrs. McCAGHERTY. Yes, sir; it was spoiled this year.

Mr. POWELL. Did the overflow this year affect the crops very much?

Mrs. McCAGHERTY. On the St. Louis place?

Mr. POWELL. No; on the home place.

Mrs. McCAGHERTY. Just one corner of what we have broken, and then we couldn't cut all the hay because the water came up so we couldn't cut it, or we could cut it, maybe, but we couldn't cure it.

Mr. POWELL. That would be down near the lake?

Mrs. McCAGHERTY. Just in the corner; maybe 20 acres that we couldn't cut.

Mr. WYVELL. This year the water was the highest in May and early June, was it not?

Mrs. McCAGHERTY. Yes, sir.

Mr. WYVELL. During that time how much of your land anywhere was actually under water? Give the best estimate you can.

Mrs. McCAGHERTY. Thirty or thirty-five acres of the home farm.

Mr. WYVELL. In the latter part of May or early in June?

Mrs. McCAGHERTY. Yes, sir.

Mr. WYVELL. How much farther back would the water seep so that it would be impossible to work the land? Give us the best estimate that you can. How many more acres were affected by the seepage?

Mrs. McCAGHERTY. I could not tell.

Mr. MIGNAULT. I think you are examining the witness on the proper line. We are obliged to say in our report that the land which would be overflowed or submerged would be so much, and if we add, as we probably should add, that there will be some land which, although not actually submerged, is injuriously affected, then we might say the land which is not submerged but injuriously affected is worth so much.

Mr. GLENN. Would that be so unless some unforeseen thing occurred? Suppose some flood in the water caused it?

Mr. MIGNAULT. That is a point that can be brought out in cross-examination, but we are obliged to say in our report that so much land would be submerged and the value of that land is so much.

Mr. WYVELL. Mrs. McCagherty, you say that 30 acres were under water at the time of the highest point. Now, will you please give us the best estimate that you can of the land which was so saturated with water that it was injuriously affected?

Mrs. MCCAGHERTY. There was a lot, but I do not know how much.

Mr. TAWNEY. Was there any?

Mrs. MCCAGHERTY. Yes, sir.

Mr. TAWNEY. In what proportion was it to the land that was actually covered, half, or as much more?

Mrs. MCCAGHERTY. As much more, I should think.

Mr. WYVELL. Of course as the waters went down you were able to use the lands that were injuriously affected?

Mrs. MCCAGHERTY. Some of it. We were able to cut hay, but we would not be able to cultivate it.

Mr. WYVELL. Were you able to make any valuable use of the land which was submerged at the time that the water reached its highest stage? Of course after it reached its highest stage it receded. Did that enable you to go upon it and work it in any way, this 30-acre tract that you speak of?

Mrs. MCCAGHERTY. No, sir.

Mr. WYVELL. That was permanently put out of commission for the year?

Mrs. MCCAGHERTY. Yes, sir.

Mr. POWELL. I thought it was only 15 acres.

Mrs. MCCAGHERTY. Yes, sir; it was only 15 acres. I made a mistake. That is not cut at all. You are able to see it yet. We were able to cut it a little later.

Mr. POWELL. This land of yours on account of its lowness would be pasture land for cattle and hay. It would not be wood for root crop.

Mrs. MCCAGHERTY. No, sir.

Mr. POWELL. When that lowland is once under hay it would remain there for 15 or 20 years.

Mrs. MCCAGHERTY. Yes, sir.

Mr. POWELL. It has never been broken up or manured?

Mrs. MCCAGHERTY. Yes, sir; it has been manured.

Mr. POWELL. With a top dressing?

Mrs. MCCAGHERTY. Yes, sir.

Mr. POWELL. A dose of water on there for two or three weeks or even for a month in the spring of the year would be rather an improvement.

Mrs. McCAGHERTY. Yes, sir.

Mr. POWELL. That is, if it went away in time for you to cut your hay?

Mrs. McCAGHERTY. Yes, sir; but it did not.

Mr. POWELL. Certainly not on the 15 acres.

Mrs. McCAGHERTY. No, sir; and it is there yet.

TESTIMONY OF NORDAHL CARLSON, OF WARROAD, MINN.

(Nordahl Carlson, being duly sworn, testified as follows:)

Mr. STEENERSON. Mr. Carlson, where do you live?

Mr. CARLSON. I live up near Swift, joining Mr. Landby on the west.

Mr. STEENERSON. How much land have you?

Mr. CARLSON. A quarter section.

Mr. STEENERSON. One hundred and sixty acres?

Mr. CARLSON. One hundred and sixty acres.

Mr. STEENERSON. How long have you had that land?

Mr. CARLSON. I bought that land in the spring of 1906.

Mr. MAGRATH. Is that the southeast quarter?

Mr. CARLSON. It is the northwest fourth of the southwest fourth of section 1; the east half of the southeast quarter, and the southwest fourth of the southeast quarter of section 2.

Mr. STEENERSON. What have you been using the land for?

Mr. CARLSON. Farming.

Mr. STEENERSON. How much has been cultivated or used for farming?

Mr. CARLSON. We have somewhere near 60 acres under cultivation.

Mr. STEENERSON. Has any more of it been cleared?

Mr. CARLSON. Yes; about 40 acres more has been more or less cleared, enough to cut the hay.

Mr. POWELL. Where does that lie?

Mr. CARLSON. The portion that I use lies immediately to the northward of the road. The eastern half of this portion is under cultivation and the western half is in part cleared and under cultivation. The balance is not cleared. A portion of the two outer 40-acre blocks is also cleared on the southern sides.

Mr. STEENERSON. Well, to make it plain to a person who reads this record, I wish you would state again how much of the land has been cultivated and how much has been cleared without being cultivated?

Mr. CARLSON. We have somewhere between 50 and 60 acres under actual cultivation, and then there will be but about 40 acres more that is cleared and not under plow.

Mr. STEENERSON. You use it for hay?

Mr. CARLSON. We use it for hay land; yes, sir.

Mr. STEENERSON. This that is under cultivation, how was it, as to being covered with timber or brush?

Mr. CARLSON. It was practically all covered with heavy poplars and willows and brush.

Mr. STEENERSON. What was the expense of clearing it?

Mr. CARLSON. We have some of it there that will cost us as high as \$60 an acre for getting it ready for grain.

Mr. STEENERSON. What would be the average for the whole piece, the 160 acres?

Mr. CARLSON. Thirty or thirty-five dollars an acre would be the expense of clearing that 160 acres.

Mr. STEENERSON. Would that include the breaking?

Mr. CARLSON. Yes, sir; getting it ready for the plow.

Mr. STEENERSON. How much an acre has been spent on that other piece for clearing?

Mr. CARLSON. For cutting the hay, do you mean?

Mr. STEENERSON. Yes.

Mr. CARLSON. Five dollars to ten dollars an acre, I should judge.

Mr. STEENERSON. How many years have you raised crops there?

Mr. CARLSON. I think somewhere since about 1907 or 1908 we started to raise crops there.

Mr. STEENERSON. When did you first get the land?

Mr. CARLSON. In 1906, if I am not mistaken, and we started to clear and break right afterwards.

Mr. STEENERSON. How has your land been with reference to being overflowed from the lake during those years?

Mr. CARLSON. There are about 40 acres that is practically all submerged by the lake. That is practically useless at the present time for anything.

Mr. STEENERSON. Has it been submerged every year, or just this year?

Mr. CARLSON. Not every year; some years partly and other years worse.

Mr. STEENERSON. This year 40 acres have been made entirely useless?

Mr. CARLSON. Yes, sir; we haven't got anything on it.

Mr. STEENERSON. You have had higher water on your land this year than before?

Mr. CARLSON. We have had higher water than this year before, but the years gone we have not had as high water. We cut some hay on it, which we couldn't do this year.

Mr. STEENERSON. Have you examined these surveys and maps which indicate how the lake would have been if there had been no obstruction to the outlet? Have you investigated the natural levels as indicated by these maps?

Mr. CARLSON. Yes; I have looked at them.

Mr. STEENERSON. How would your land be if the lake were at natural level?

Mr. CARLSON. Practically every foot would be all right for farming, as far as I could judge.

Mr. TAWNEY. Of what levels are you speaking?

Mr. CARLSON. The natural level of the lake.

Mr. STEENERSON. The natural level of the lake as indicated on the surveys. Now, what would be the value of your land if it were not affected by the high water of the lake?

Mr. CARLSON. If the water were off my land, I would not sell it for no money, because it is my home, and I am trying to make it for my home.

Mr. STEENERSON. Considering the crops you raise and the profits you make on the farm, I suppose you can fix a value per acre?

Mr. CARLSON. If I were brought to sell it, I do not know whether I would take \$75 an acre or not.

Mr. STEENERSON. Do you think it would be worth that?

Mr. CARLSON. I think so; yes.

Mr. STEENERSON. Some of it has cost \$35 an acre to clear?

Mr. CARLSON. Yes; some of it cost more.

Mr. STEENERSON. How much less would this farm be worth with the level maintained as high as has been the highest this year?

Mr. CARLSON. With the land that is spoiled by drainage, and this and that, practically two-thirds of the value is taken out of the place right now, the way the lake stands now.

Mr. STEENERSON. Two-thirds of the value is taken out the way the lake stands now?

Mr. CARLSON. Yes, sir.

Mr. STEENERSON. If it went 1 foot higher, how would it be then?

Mr. CARLSON. It would be worth nothing.

Mr. STEENERSON. You have a house and a barn and a granary?

Mr. CARLSON. Yes, sir.

Mr. STEENERSON. Can you give us an estimate of how much your buildings altogether cost to put up, counting all the work?

Mr. CARLSON. About \$3,000 or more; \$3,500.

Mr. ROCKWOOD. Mr. Carlson, what do you mean by water at its "natural level"?

Mr. CARLSON. All I mean is going by the map where I see the natural level right before me on the map; that is all I know about the natural level of the lake. It is according to my judgment of the map.

Mr. ROCKWOOD. Point out on the map what you mean by "natural level."

Mr. POWELL. There is nothing marked "natural level" there.

Mr. CARLSON. I mean, then, to the open water of the lake—to the lake shore.

Mr. POWELL. You mean if the water never came inside the line that is shown in the deepest blue? Is that what you mean?

Mr. CARLSON. Yes; the shore of the lake.

Mr. STEENERSON. From the testimony of Mr. Meyer explaining that book I understood that it indicated the natural level.

Mr. POWELL. No; that indicated the water line when the survey was made.

Mr. ROCKWOOD. Mr. Carlson, do you know whether before the dam was built the water sometimes came higher than that?

Mr. CARLSON. I do not know. I did not know at the time when I got the possession of the land that there was a dam in existence. I never knew it.

Mr. ROCKWOOD. Do you know anything about what the condition was before the dam was put in with reference to the level of the water?

Mr. CARLSON. No; I do not.

Mr. ROCKWOOD. Then, when you say "natural level," you simply refer to this map, and you mean that if the water never came across that line that marks the deep blue—

Mr. CARLSON. Yes; I think if the lake went down so that the water got back to the open lake the farm would be practically all right for every foot.

Mr. ROCKWOOD. If the water never came any higher than that?

Mr. CARLSON. That is my judgment so far as I can judge of it.

Mr. ROCKWOOD. That is what you mean by the phrase you use, "natural level," is it not?

Mr. TAWNEY. That is what he said, Mr. Rockwood.

Mr. ROCKWOOD. How did you get your land?

Mr. CARLSON. I bought it, sir.

Mr. ROCKWOOD. From whom?

Mr. CARLSON. From C. E. Carlquist at Warroad.

Mr. ROCKWOOD. What did you pay?

Mr. CARLSON. I paid \$10 an acre.

Mr. ROCKWOOD. Was it entirely wild?

Mr. CARLSON. Practically; just little spots here and there that are in between the timbers that are opened and, I expect, have been naturally opened; there may be a little picked up on it; that is all.

Mr. STEENERSON. No buildings?

Mr. CARLSON. No buildings; an old house there that is worthless.

Mr. ROCKWOOD. That was in 1906?

Mr. CARLSON. I will not say exactly, but it was either 1906 or 1907.

Mr. ROCKWOOD. When you bought it, you just took it as it was and had no reason to suppose that there would ever be any change in the waters? In other words, you did not investigate the question of water levels before buying?

Mr. CARLSON. No; I did not investigate those questions, because I never knew about the dam or anything of that kind in existence when I bought it.

Mr. ROCKWOOD. You bought it expecting to use it just as you have used it; that is, to clear it and make a farm of it?

Mr. CARLSON. That is what I bought it for.

Mr. ROCKWOOD. In what month in 1906 did you buy it?

Mr. CARLSON. I think it was in the spring. I could not say just what month unless I look it up by the papers that I have.

Mr. ROCKWOOD. Where did you live before?

Mr. CARLSON. I was just a common laborer.

Mr. ROCKWOOD. Here in this neighborhood?

Mr. CARLSON. Yes; I had my homestead near the place out there, and that is where I lived.

Mr. ROCKWOOD. Where was the homestead?

Mr. CARLSON. It was in the township adjoining on the east.

Mr. ROCKWOOD. On the lake?

Mr. CARLSON. No; I am about 2 miles or a mile and a half from the lake there.

Mr. ROCKWOOD. You say your buildings are worth \$3,000?

Mr. CARLSON. Yes, sir.

Mr. ROCKWOOD. You have put up those buildings by your own efforts?

Mr. CARLSON. Every bit of them.

Mr. ROCKWOOD. You did not have any other money to put into it?

Mr. CARLSON. No other money.

Mr. ROCKWOOD. Did you have money to pay for the land?

Mr. CARLSON. No, sir.

Mr. ROCKWOOD. You bought it on time?

Mr. CARLSON. Yes, sir.

Mr. ROCKWOOD. Have you got it paid for now?

Mr. CARLSON. Well, practically; yes.

Mr. ROCKWOOD. What is the highest price at which you have known land to sell in that neighborhood?

Mr. CARLSON. Well, in the later years there has been no land changed hands in the neighborhood that I know of.

Mr. ROCKWOOD. Whether fronting on the lake or not, you have not known of any being sold?

Mr. CARLSON. Nothing but what you already know of, that little that Landby stated was bought at Swift and I guess Tom Ewing sold some here at Warroad, but I do not know what price he got. That is practically all I know of that has changed hands on the lake in later years.

Mr. ROCKWOOD. Then you do not fix your value with reference to any sales, but you are simply judging what it is worth from what you have actually done?

Mr. CARLSON. Yes; and what it cost me to get it in the shape in which I have it now.

Mr. ROCKWOOD. What you have put into it and what you have taken out of it?

Mr. CARLSON. Yes, sir.

Mr. ROCKWOOD. Now, Mr. Carlson, \$75 an acre for your 160 acres would be how much?

Mr. CARLSON. I haven't figured that up. I would have to have a pencil and paper to figure that up.

Mr. ROCKWOOD. Well, figure it up.

Mr. CARLSON. They say \$1,200 here, although I haven't figured that up.

Mr. ROCKWOOD. If you had \$1,200 in cash and wanted to buy a farm somewhere in this same neighborhood would you pay \$1,200 cash for that farm or would you expect to be able to do better than that by looking around?

Mr. CARLSON. I do not think if I were going to get the farm in as good condition as I have this one I could do it for less than that. I think I would have to pay more where I have traveled.

Mr. ROCKWOOD. Traveled where?

Mr. CARLSON. In different places.

Mr. ROCKWOOD. Where? When you say "different places" what places do you mean?

Mr. CARLSON. I have been down the Red River Valley and also up in Canada.

Mr. ROCKWOOD. From anything you have heard about prices at which land has changed hands in this neighborhood, do you think you would have to pay \$1,200 to get a farm about like yours or to buy raw land and clear it up and make it as good as yours?

Mr. CARLSON. I will just tell you if I am allowed to tell you.

Mr. ROCKWOOD. Just answer in your own way.

Mr. CARLSON. I offered a man last spring for a quarter section of land there \$3,500, but he would not take it. It was right in that neighborhood.

Mr. TAWNEY. How far was it from your land?

Mr. CARLSON. It adjoins me on the south.

Mr. GLENN. How much did you offer him?

Mr. CARLSON. Thirty-five hundred dollars, but, of course, he would not sell at that. There wasn't very much broke on that.

Mr. ROCKWOOD. Were there any buildings?

Mr. CARLSON. Yes; a small house and a small barn.

Mr. ROCKWOOD. You made an offer for that particular piece rather than some other piece because it joined your property and would fit onto your property?

Mr. CARLSON. Well, as far as that goes, I had an idea that I could buy the land just as cheap from him as I could from anybody around there. I know I could. I could not buy from anybody any cheaper than I could from him.

Mr. GLENN. If that land down there in the neighborhood of yours is being ruined by these floods, why would you want another farm adjoining yours for which you would pay \$3,500?

Mr. CARLSON. Excuse me; this farm is on the south and the land there leans pretty heavily.

Mr. GLENN. No floating?

Mr. CARLSON. No; the water has a chance to get off from that land.

Mr. GLENN. I want to know in what years you made your best crops. I want to compare that with the report we have here of the levels. You went there in 1907 or 1908, so you have had it seven or eight years. In what years did you get your best crops?

Mr. CARLSON. Where we have the crop is along the south edge of the land, the highest and the driest part of land that we have on these 160 acres. If I am not mistaken, the last crop we had was in 1910, and then we raised 73 bushels of oats to the acre.

Mr. STEENERSON. Of course, as a usual thing a wet year with lots of rain makes a good grain crop, if the land is high enough to get rid of the water.

Mr. CARLSON. Yes, sir.

Mr. STEENERSON. So that it would be quite probable that on the high land you would raise the best crops where the lake was the highest?

Mr. CARLSON. Yes, sir.

Mr. STEENERSON. But where the lake got so high as to destroy the crop there was nothing raised there?

Mr. CARLSON. No, sir.

Mr. POWELL. About how much of your land was covered with water this year?

Mr. CARLSON. About 40 acres of it is covered now.

Mr. POWELL. Which would that be—the outer portions, the land next to the lake?

Mr. CARLSON. Fourteen in section 1 and the adjoining fourteen.

Mr. POWELL. The two sections farther away from the road?

Mr. CARLSON. Yes, sir; two forties farther away from the road.

Mr. POWELL. There is a matter I would like you to explain, because it stands rather peculiarly here. You remember you gave evidence before the commission three years ago. At that time you swore the value of your land was \$50 an acre. How do you reconcile that with the \$75 mentioned to-day?

Mr. CARLSON. I can not see any reason why the way the country is improving that the land is not raising in value.

MR. GARDNER. Have you not made improvements in that time?

MR. CARLSON. Yes; I built a house this summer. I have not finished it yet, but when I am through with it it will cost me \$2,000.

MR. POWELL. In your statement to us on that occasion—it was in answer to a question by me, I think—you stated that practically all your land was covered with water at that time?

MR. CARLSON. I think I will deny that. I did not say so, but I said it was affected by water; and the next thing at that time, I will tell you, it was pretty hard for me to come in here. I hardly knew anyone, and I was not prepared, and I was not in good shape to do anything.

MR. POWELL. That is, you were taken unawares?

MR. CARLSON. It was a pretty hard situation for us.

MR. POWELL. Another thing I would like to call your attention to is this: You at that time swore that when you got the land it was all dry——

MR. CARLSON (interrupting). May I ask you if we were sworn in at that time?

MR. POWELL. Is that your explanation—that you made that statement when you were not sworn? That is all.

MR. STEENERSON. Do you want to make any further explanation?

MR. CARLSON. I do not know that there is anything that he refers to that needs my explanation. If there is anything, I will do so.

MR. MAGRATH. At the time that you located on the land was there any uneasiness in this district as to the flooding of lands along the south shore?

MR. CARLSON. I will tell you. I have, I think, in fact, never known anything about the dam, and coming in here a stranger, you might say, I did not know anything about it.

MR. STEENERSON. And you did not hear anything about it?

MR. CARLSON. I did not hear anything about it; no.

MR. TAWNEY. Mr. Magrath wants to know if there was any comment in the neighborhood as to the flooding of lands around here from the lake.

MR. CARLSON. It was after I bought the land.

MR. TAWNEY. You did not inquire before you bought the land as to whether the lake ever flooded the land around here or not?

MR. CARLSON. No; I never inquired about it.

MR. POWELL. You came in as a stranger?

MR. CARLSON. Yes, sir.

MR. STEENERSON. You looked at the land before you bought it?

MR. CARLSON. Yes.

MR. STEENERSON. And it was dry then?

MR. CARLSON. Yes.

MR. MAGRATH. Did you take up this land at the same time as you took up your homestead?

MR. CARLSON. I homesteaded in the fall of 1902, I think it was. Then, you see, I was off and on out working. Finally, I settled down on the homestead after I bought here.

MR. POWELL. Was any of your hard or firm land overflowed this year?

MR. CARLSON. Yes, sir.

MR. POWELL. How much of it?

Mr. CARLSON. Two lots fronting on the road. You can hardly drive a horse over it now. That is on the hard meadow land.

Mr. POWELL. How far up on the land did the water come?

Mr. CARLSON. Just about halfway up. The actual water takes about half of the two.

Mr. POWELL. That is, the overflow?

Mr. CARLSON. Yes; and then the seepage comes back.

Mr. POWELL. Mr. Carlson, the engineers' reports here show that all that land should have been out of water this year. They must have made a tremendous mistake if that is not the case.

Mr. CARLSON. It is not. The lake backed up in that ditch and the water overflowed.

Mr. POWELL. When you say "overflowed," you mean that the water is in the ditches?

Mr. CARLSON. Well, the water is there.

Mr. POWELL. In the ditches?

Mr. CARLSON. It is on the land and in the ditches also.

Mr. STEENERSON. There is only one ditch.

Mr. CARLSON. There is just one ditch that lets out on the east forty there.

Mr. STEENERSON. That is the county ditch?

Mr. CARLSON. No; that is a ditch that was dug by the railroad.

Mr. STEENERSON. The water backs up in the ditch when the lake is high?

Mr. CARLSON. Yes, sir.

Mr. KEEFER. When did you buy the land?

Mr. CARLSON. As I have stated, I think it was in 1906.

Mr. KEEFER. Do you own the whole of it?

Mr. CARLSON. No; there are two brothers that own it.

Mr. KEEFER. So you have only a half interest in it now?

Mr. CARLSON. Yes, sir.

Mr. KEEFER. Mr. Powell was speaking about his having asked you certain questions at a previous hearing. I see that Mr. Streeter, one of the former commissioners, tried to get you to put a valuation on your land; and Mr. Casgrain asked you this question: "What would you take for your half interest in it?" You replied: "I will simply not answer any more questions of that kind."

Mr. CARLSON. When was that?

Mr. KEEFER. When you were last here.

Mr. CARLSON. Were they here to buy land at that time?

Mr. KEEFER. Mr. Streeter tried to get you to put a valuation on your land at that time. Since then you have been able to put a valuation on it.

Mr. CARLSON. I certainly ought to.

Mr. KEEFER. But you could not then.

Mr. CARLSON. That is a long time since.

Mr. BERKMAN. Mr. Chairman, they are simply trying to take advantage of the witness who comes in here unprepared on the water question of this controversy. They are not represented by counsel, and they come in here and expect to get a square hearing.

Mr. KEEFER. I hardly think that is correct, because these were three commissioners asking these questions and not counsel at all.

Mr. STEENERSON. Is not that a matter for argument? If this counsel wants to criticise this testimony as compared with former testimony it is his privilege to do so, but it does not seem to me that it is within proper bounds to have one water power company—

Mr. KEEFER (interrupting). My dear sir, I am not representing a water power company; I represent the Government. I only want to see that these men get what is right and that they do not get more than is right. You are under a misapprehension. I want to try to find out why he can give a valuation now when before he could not.

Mr. POWELL. The question is a perfectly legitimate one. We can not look at ulterior motives.

Mr. STEENERSON. It goes to the credibility of the witness. If you think this witness has stated anything that is not true, you can go on.

Mr. ROCKWOOD. In this connection, I desire to call attention to plate No. 121, which shows that the water was above 1061 during the entire season of 1906 until the first of August, excepting for a portion of March and April. The water was higher than it is now, and while it is, of course, irrelevant, the water power companies were not represented at any of these hearings at Warroad in 1912.

Mr. STEENERSON. We have a whole lot of witnesses here, and it seems to me that the commission itself ought to examine them or limit the number of lawyers. We have put on some men who are perfectly able to take care of themselves, but we have others who are timid, and if they now learn that before they get through there is to be cross-examination by all these eminent gentlemen, who are equal to any in the world, it is awing to the poor farmers. It seems to me you ought to adopt the rule that counsel opposed to these farmers should select one man to conduct the examination.

Mr. TAWNEY. It is not a question of who is opposed to these farmers. The Governments on both sides and the people on both sides are interested. This is an international question and this is an international tribunal. The tribunal must necessarily recognize the right of the Federal Governments and of the States and Provinces, as well as the rights of the people on both sides, to participate in an investigation which affects them directly or indirectly. I do not think it is becoming on the part of any interests to criticise the representatives either of the Governments or of the various interests that may be represented. We are trying to ascertain the truth as near as we can under the ordinary rules of practice that obtain in court with respect to the examination of witnesses.

(The commission thereupon, at 6.10 o'clock p. m., adjourned until Wednesday, September 8, 1915, at 9 o'clock a. m.)

WARROAD, MINN.,
Wednesday, September 8, 1915.

The commission met, pursuant to the adjournment, at 9 o'clock a. m., all the members being present and Mr. Tawney presiding.

Mr. STEENERSON. Mr. Chairman, I would say that I expected another witness, but I will put Mr. Peterson on the stand now.

TESTIMONY OF ANDREW W. PETERSON, OF ROOSEVELT, MINN.

(Andrew W. Peterson, being duly sworn, testified as follows:)

Mr. STEENERSON. What is your occupation?

Mr. PETERSON. Farming.

Mr. STEENERSON. Where is your farm?

Mr. PETERSON. At Zippel.

Mr. STEENERSON. Can you give the Government description of it?

Mr. PETERSON. The southwest quarter of the southwest quarter of section 10, 40 acres; the northwest quarter of the northwest quarter of section 15, 40 acres; and the east half of the northeast quarter of section 15, 80 acres; township 162 north, range 33 west.

Mr. STEENERSON. How long have you lived there?

Mr. PETERSON. Five years last April.

Mr. STEENERSON. What was the land when you first went there? Was it prairie or brush or timber?

Mr. PETERSON. It was brush and meadow land, some of it, and timber.

Mr. STEENERSON. Have you cleared any of it since you got it?

Mr. PETERSON. I have.

Mr. STEENERSON. How many acres?

Mr. PETERSON. About 22 acres. I cleared 15 in section 10 where the meadow is, and the rest up in section 15, where I live.

Mr. STEENERSON. I do not suppose it is necessary to locate claims. I want just to get an idea of the value of it. This is not an engineering proposition. We can go into further details when we come to assess damages. Mr. Peterson, you may state what the cost of clearing was there per acre.

Mr. PETERSON. I can not say that exactly. I cleared it myself.

Mr. STEENERSON. You worked it yourself?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. Do you know about what it costs per acre to do work of that kind?

Mr. PETERSON. It costs about \$25 per acre; that is what the men charge who are hired to do it.

Mr. STEENERSON. Besides clearing, did you break up any of it?

Mr. PETERSON. Yes, sir; some of it was broken.

Mr. STEENERSON. That cost something additional.

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. How much did that cost?

Mr. PETERSON. That cost about \$3.50 or \$4 an acre to break it.

Mr. STEENERSON. Have you any buildings?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. What buildings have you put up there?

Mr. PETERSON. I have two houses on it and a stable.

Mr. STEENERSON. What are the houses, frame or log?

Mr. PETERSON. One is frame and one is log.

Mr. STEENERSON. What is the size of the frame house?

Mr. PETERSON. Fourteen by twenty-four.

Mr. STEENERSON. One or two stories?

Mr. PETERSON. Two.

Mr. STEENERSON. Is that where you live?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. You have a family?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. How big a family have you?

Mr. PETERSON. I have at present only three; otherwise I have five when they are at home.

Mr. STEENERSON. Is the other house a log house?

Mr. PETERSON. That is log.

Mr. STEENERSON. Has it a shingle roof?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. The frame house has a shingle roof?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. You have a stable?

Mr. PETERSON. Yes, sir; the stable is 14 by 18.

Mr. STEENERSON. Have you any other buildings but those three?

Mr. PETERSON. Only what we need; little sheds, etc.

Mr. STEENERSON. Have you any live stock?

Mr. PETERSON. Yes; I have a couple of head, that is all.

Mr. STEENERSON. Horses?

Mr. PETERSON. No, sir.

Mr. STEENERSON. You have cultivated this land?

Mr. PETERSON. Some of it; yes.

Mr. STEENERSON. What crops have you raised?

Mr. PETERSON. Potatoes and vegetables.

Mr. STEENERSON. What is the kind of soil there?

Mr. PETERSON. Clay.

Mr. STEENERSON. Is it productive?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. Does it produce good crops?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. How many acres have you raised crops on?

Mr. PETERSON. About three years ago I raised crops on about 3 acres.

Mr. STEENERSON. And the rest of it that you have cleared you have used for hay?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. You cut hay whenever it was producing?

Mr. PETERSON. Whenever I could cut there.

Mr. STEENERSON. Whenever it was dry enough so you could cut there?

Mr. PETERSON. Yes, sir; but I haven't cut hay this year yet.

Mr. STEENERSON. Why not?

Mr. PETERSON. Because of the water.

Mr. STEENERSON. Is the water higher there this year than it was before?

Mr. PETERSON. It has been higher this year than it has ever been since I went there.

Mr. STEENERSON. How much higher?

Mr. PETERSON. At least 12 to 14 inches higher than it has ever been that I know of.

Mr. STEENERSON. How much of your cleared land has been affected by the high water?

Mr. PETERSON. Mostly all this summer.

Mr. STEENERSON. How does it affect your house? Does it come into the cellar or near the house?

Mr. PETERSON. Yes, sir; I bailed the cellar in the spring.

Mr. STEENERSON. Was that necessary before? Was this the first year you did that?

Mr. PETERSON. Last year, too, but not before that; in 1910 and 1911 it was not a necessity; it was dry.

Mr. STEENERSON. Is there any standing water near your house this year? Has there been during the early part of the year?

Mr. PETERSON. There has been during the early part of the year.

Mr. STEENERSON. How near the house did it come?

Mr. PETERSON. Within 25 rods on the west side.

Mr. STEENERSON. You may state what is the value of this land when it is not affected by this high water as it was when you got it?

Mr. PETERSON. I do not know that I can give a value, because it is not for sale; it is my home and intended to be my home and nothing more.

Mr. TAWNEY. Do you know what similar lands sell for in that neighborhood—cleared lands like that?

Mr. PETERSON. I could not say, for there is nothing that I know of that has been sold around there. Each one has it for his own home.

Mr. TAWNEY. You say there are only three acres under cultivation?

Mr. PETERSON. That is what I could plow that way and use. The rest of it is too wet.

Mr. TAWNEY. Has that been the case ever since you came there?

Mr. PETERSON. Yes, sir. That is only the last two summers now.

Mr. STEENERSON. How much hay have you raised off this cleared land?

Mr. PETERSON. I can cut 20 acres on that piece when it is all right.

Mr. STEENERSON. What do you use the hay for? Do you sell it or feed it?

Mr. PETERSON. I feed some and sell some.

Mr. STEENERSON. Is there a market for hay there?

Mr. PETERSON. There has been.

Mr. STEENERSON. What do you get a ton for it?

Mr. PETERSON. We get from \$7 to \$10.

Mr. STEENERSON. Do you have to haul it to the railroad or do they come and get it on the farm?

Mr. PETERSON. They come and get it on the farm.

Mr. STEENERSON. Could you not put a value on your farm?

Mr. PETERSON. I do not like to put a value on a thing that I do not like to sell.

Mr. ROCKWOOD. Mr. Peterson, did you homestead the land?

Mr. PETERSON. Yes, sir.

Mr. ROCKWOOD. Five years ago?

Mr. PETERSON. Yes, sir.

Mr. STEENERSON. Excuse me; I have been studying over this matter of having these witnesses testify in detail. This is only a preliminary examination. It does not seem to me that it is appropriate to have lawyers come in and spend a great deal of time on these farmers.

Mr. ROCKWOOD. I am through, Mr. Steenerson.

Mr. STEENERSON. I am speaking for the future. I have selected a few farmers from each locality. From the limited time we have we will never get through. The gentleman is a skillful lawyer—I have

tried cases with him—and he will consume all of the time if he is permitted without violating any rules. It can hardly be appropriate to allow any time to speak of on these values. It is a very incidental matter, and I am saying this now because I have eliminated a whole lot of them for the sake of saving time, and I will call only a few farmers from each locality, so that the commission will be given an idea of those that are here and judge from them the value of the farms that are not represented.

MR. TAWNEY. Mr. Steenerson, the commission has a certain duty to perform for both Governments in this matter. We are required to ascertain, as near as we can, what the value of the land is that is submerged. It is not material who is to pay for the lands that may be submerged at any level that the commission may recommend, but it may become very material to the various interests on both sides of the line, and I do not see that there is any impropriety in any person or in any interest that is affected—

MR. STEENERSON (interrupting). I will submit to whatever the commission does.

MR. TAWNEY. If counsel feel that they want a little further information from the witness in regard to facts, there is no impropriety at all in allowing the representatives of the interests that are involved here to ask additional questions. Of course we do not intend to allow the direct examination or the cross-examination to go on indefinitely or involve immaterial matter.

MR. STEENERSON. But your honor knows that at the bar cross-examination is very often limited. This is not a mere trial. It is not a case like the Tichborne case, where the bite of a flea decided the very important question of membership in the House of Lords or something of that kind. Your honor made a statement there that I have not fully argued. I do not want to let it pass without stating my contention. My contention is this: I know the engineers' reports and all the statements of the engineers go upon the exclusive theory of a literal construction of this reference and of the treaty, but I contend for a broader one.

If the construction placed upon the reference by the engineers, a literal construction, is followed, it would only be the area submerged; but the treaty must be construed with reference to the Constitution of the United States and also the fundamental principle of law governing in the other jurisdiction, and that is when they say submerged, or its equivalent, are not using strict terms. They say an agreement or reference from the State Department. They mean the taking of private property for public use, and the taking of property for public use includes the indirect damages, the consequential and injurious effects, as well as the direct submergence.

MR. TAWNEY. There is no controversy, Mr. Steenerson, on that question at all.

MR. STEENERSON. I am very glad, then. I was afraid there was.

MR. ANDERSON. At this stage, Mr. Chairman, I would like to make a remark. Yesterday I took no part at all in the examination of witnesses called with reference to land values. I did not because I was a little embarrassed by reason of my position. Of course, I represent the Canadian Government. In coming down here to the State of Minnesota I did not feel like putting myself in the position

that Mr. Steenerson wanted to represent yesterday, that we were opposing the farmers here who are making claims. I am not in that position. As representing my Government I do not want to occupy the position of opposing any claims that they may put forward, but at the same time it is very difficult to know just what the final result of this will be, and I want it clearly understood that if at any time during the progress of the investigation I should ask any questions I am not opposing the people who are making these claims; I am only asking the questions for the purpose of getting the information so that the commission will be in a position to intelligently deal with the matter at some stage. So far as we are concerned, and I think so far as everybody is concerned, this is an absolutely friendly international investigation. It is a matter that has been referred by both countries to this body for investigation and report, and I trust that no one will carry away any idea that, so far as Canada is concerned, we are attempting in any way to minimize any claims that may be put forward by any class of individuals. Therefore, if I do find it necessary at any time to take any part, I trust that my position will be clearly understood.

MR. STEENERSON. I am certainly very grateful for the explanation.

MR. KEEFER. As representing the Province of Ontario, and not a power interest, I quite concur in what Mr. Anderson has said. Everything he said is absolutely correct so far as the Province of Ontario is concerned. We do not want to see any person suffer any damage without getting proper compensation, but as a member of the bar you feel it your duty to elicit the truth for the commission when you see certain things crop up. If the Congressman will only look back to the time that has been consumed he will find that six-tenths have been taken up by himself and perhaps two-tenths by the rest of us.

MR. STEENERSON. I wish to say that I did not intend to reflect in the slightest degree upon anyone. I am very glad to understand the situation, especially in view of the fact that I have indirect requests from farmers living in the Dominion of Canada affected by this matter to the effect that I should examine their cases. Now, I will produce those farmers and I shall be glad to have the representative of the friendly Government examine them as to the damages they have suffered. I declined to do that because I thought it was a liberty. I am delighted to know that their case will be properly presented.

MR. WYVELL. I think in each case it should go on the record as to what the farmer claims with regard to the land actually submerged and then what the farmer claims with regard to the land injuriously affected. Wherever that does not appear I would like to bring that out.

Now, Mr. Peterson, how much of your land was actually under water at the time the water reached its highest stage this year—in June, I think it was?

MR. PETERSON. About 28 acres in section 10, the lower part. That was under water, but it affected further up.

MR. WYVELL. I want to bring that out, too. How much of the land was affected and soaked by the water but was not actually under water? How much was injuriously affected?

Mr. PETERSON. The balance of section 15. All but 2 acres were cleared of that.

Mr. WYVELL. How many acres does that make that were affected by the water?

Mr. PETERSON. That would make it over 60 acres, at any rate.

Mr. ROCKWOOD. Is that in addition to the 28, or does that include the 28?

Mr. PETERSON. That includes the 28.

TESTIMONY OF VICTOR A. JACOBS.

(Victor A. Jacobs, having been duly sworn, testified as follows:)

Mr. STEENERSON. You live at Zippel?

Mr. JACOBS. Yes.

Mr. STEENERSON. Give us a description of your land.

Mr. JACOBS. It is the northeast corner of section 9, lots 1, 3, and 4.

Mr. POWELL. That is 160 acres?

Mr. JACOBS. It is not quite that; there is 149.09.

Mr. STEENERSON. How is it located with reference to the shore of the Lake of the Woods?

Mr. JACOBS. It is about 2 miles from where the shore used to run of the Lake of the Woods; there is no shore there now.

Mr. STEENERSON. When was that?

Mr. JACOBS. In 1904, when I filed there.

Mr. STEENERSON. You have lived there since that time?

Mr. JACOBS. Yes.

Mr. STEENERSON. How far has the shore encroached on the land?

Mr. JACOBS. Clear down to my place.

Mr. STEENERSON. How many feet, or rods, or miles?

Mr. JACOBS. It is a little better than 2 miles.

Mr. STEENERSON. The shore line was 2 miles farther out into the lake when you came there in 1904?

Mr. JACOBS. Yes; you could go there with an automobile on the sand beach.

Mr. STEENERSON. About how much higher has the lake been this last year and late years than it was when you came there?

Mr. JACOBS. Well, it has gradually increased every year.

Mr. STEENERSON. How many feet higher?

Mr. JACOBS. Well, in 1907 I guess it was about as high as we ever had it; everything was flooded clear up to my doorsteps.

Mr. STEENERSON. How was it last year?

Mr. JACOBS. This year it is just about the same—not quite, but pretty near.

Mr. STEENERSON. Was it clear up to your doorsteps this year?

Mr. JACOBS. Yes; I had to use a boat from my house to the store.

Mr. STEENERSON. You have a store there?

Mr. JACOBS. Yes.

Mr. STEENERSON. How long have you had that store there?

Mr. JACOBS. About seven years.

Mr. STEENERSON. Are you well acquainted with the farmers in that vicinity?

Mr. JACOBS. I know everyone round there.

Mr. STEENERSON. About how many do you know?

Mr. JACOBS. I probably know a little better than a hundred.

Mr. STEENERSON. You have dealt with them?

Mr. JACOBS. Yes; and we have a farmers' club at our place, and the three townships meet there once a month.

Mr. STEENERSON. And you have sold them goods?

Mr. JACOBS. Yes.

Mr. STEENERSON. And done business with them?

Mr. JACOBS. Yes; most of them.

Mr. STEENERSON. What is the kind of soil on your place?

Mr. JACOBS. It is a black soil with a clay bottom.

Mr. STEENERSON. How is it as to productiveness?

Mr. JACOBS. Very good, whenever there is a chance to put anything in, when the water is not too bad.

Mr. STEENERSON. Some years there has been a chance to put crops there?

Mr. JACOBS. Yes; some years there has and some years there has not.

Mr. STEENERSON. When it was dry enough to raise crops, what did you raise?

Mr. JACOBS. I raised vegetables of different kinds; I tried to see how it would grow; one year I had corn I took to the fair at Baudette over 11 feet high.

Mr. STEENERSON. Good developed ears?

Mr. JACOBS. Yes.

Mr. STEENERSON. What else did you raise?

Mr. JACOBS. Vegetables of all kinds, cucumbers, tomatoes, and so on.

Mr. STEENERSON. Hay?

Mr. JACOBS. Yes; that is about all we could raise. We put in a little hay.

Mr. STEENERSON. What kind of hay?

Mr. JACOBS. At present there is about two or three hundred acres in water; it has been homesteaded, but they had to abandon it, and there has been water around the house, and it is down now, so that you can get up to the doorstep.

Mr. STEENERSON. Have you a cellar in your house?

Mr. JACOBS. Cement cellar.

Mr. STEENERSON. How is it now?

Mr. JACOBS. I had a sewer out from the cellar to the bay when I made the cellar, but I had to block it because the water backs in and stays there.

Mr. STEENERSON. Have you cleared any of this land from brush and timber?

Mr. JACOBS. I tried to clear it.

Mr. STEENERSON. Have you cleared some of it?

Mr. JACOBS. Yes.

Mr. STEENERSON. How many acres?

Mr. JACOBS. From 15 to 18 acres, I should judge.

Mr. STEENERSON. What kind of timber or brush was it?

Mr. JACOBS. Thick brush; it is poplar and oak and birch and elm.

Mr. STEENERSON. What did it cost per acre to clear it?

Mr. JACOBS. I do not think you could clear it less than \$100 an acre; very heavy timber; there are oaks there I should judge about from 12 to 15 inches through.

Mr. TAWNEY. What was the timber worth that you took out, per acre?

Mr. JACOBS. Well, there is Bombagalien poplar is really worthless there; you can not use them; we had no mill there and you can not float them on the lakes, and we had no roads to the track.

Mr. TAWNEY. Did you have any cedar poles on the land?

Mr. JACOBS. Well, I have some, but I have not cut them off yet.

Mr. STEENERSON. In regard to this land that is cleared, did the timber pay for part of the cost of the clearing, or did it not?

Mr. JACOBS. Oh no; just burned it up.

Mr. STEENERSON. How many acres of that kind of clearing have you?

Mr. JACOBS. I have probably about 4 acres.

Mr. STEENERSON. Have you some other clearing that cost less?

Mr. JACOBS. Yes.

Mr. STEENERSON. What will that cost?

Mr. JACOBS. Probably about \$10 an acre.

Mr. STEENERSON. Brush?

Mr. JACOBS. Yes; but this along the bay front I wanted fixed up for a residence and kind of picnic ground.

Mr. STEENERSON. How much did your buildings cost?

Mr. JACOBS. They cost in the neighborhood of \$2,500.

Mr. TAWNEY. How long did the water remain near your doorstep this year or last year?

Mr. JACOBS. This year it remained there for pretty nearly two months.

Mr. TAWNEY. How was it before that?

Mr. JACOBS. Well, it is about, you might say, a foot to a foot and a half bay front.

Mr. TAWNEY. How is that?

Mr. JACOBS. About a foot and a half of bank along the bay.

Mr. TAWNEY. How long did it continue near your doorstep?

Mr. JACOBS. For pretty near two months; I guess June and July.

Mr. TAWNEY. I meant before this year?

Mr. JACOBS. Only one year it came up to the doorstep.

Mr. TAWNEY. How long did it remain then?

Mr. JACOBS. I can not just exactly say how long it remained there, but I was down to Minneapolis in the summer, and I came back in the fall, and I was surprised, I did not hardly know the place when the water was on it.

Mr. STEENERSON. What do you value this land at, assuming it is not overflowed by the rise in the lake?

Mr. JACOBS. Well, I got it for my home. I lived in Minneapolis for 30 years and I was——

Mr. STEENERSON. If you can not give any value, say so, and if you can, give it?

Mr. JACOBS. Well, I could not give you any value of that land. If it is going to continue the way it is, it is worthless, and if the water would go down to the natural flow, or some below, then it would be as nice a place as there is in the country.

Mr. STEENERSON. It would be valuable for farming, would it?

Mr. JACOBS. Yes.

Mr. STEENERSON. Is the soil in that neighborhood about the same as the soil on your land?

Mr. JACOBS. The best of soil in the State of Minnesota up round through that country.

Mr. STEENERSON. How is it with regard to raising corn and other vegetables and crops?

Mr. JACOBS. Well, I have tried it and I know it is successful.

Mr. STEENERSON. Is there any difference with reference to the damages when the frost comes along near the lake and further back?

Mr. JACOBS. Well, it don't touch the vegetables close to the lake as it does back in the woods. Many times they come in and are surprised to see my stuff all green when theirs is frozen.

Mr. STEENERSON. I presume that this land is at least worth the amount it cost to clear it and the value of the buildings?

Mr. JACOBS. Why, certainly.

Mr. STEENERSON. And it has some additional value?

Mr. JACOBS. Yes.

Mr. STEENERSON. Supposing you wanted to sell, what would it be worth?

Mr. JACOBS. Well, I sold 4 acres in 1910 to a man at \$50 an acre, and a point, a little fraction, sticking out in the bay, to put his house on, and this year he had to row up to his land with a boat, and at that time it was nice dry banks.

Mr. POWELL. What year was that?

Mr. JACOBS. I think it was in the fall of 1910.

Mr. GLENN. How much land have you fenced?

Mr. JACOBS. I have not fenced any of it; I fenced around the garden, that is all.

Mr. GLENN. You have seen this map the engineers prepared?

Mr. JACOBS. Yes.

Mr. GLENN. Do you notice there that they put that land of yours, except 2 acres, in reeds and marsh? Is that correct?

Mr. JACOBS. Except 2 acres?

Mr. GLENN. Just where your house is; the rest they put in reeds and marsh?

Mr. JACOBS. When was that taken?

Mr. GLENN. 1913-14.

Mr. JACOBS. Last year I had two or three men in there clearing from the house to the store, in back there.

Mr. GLENN. I notice there is no cultivated land put on the map?

Mr. JACOBS. Well, I only cultivated the garden around the house; that is the piece I had under cultivation; what they call reeds and weeds is where I cleared for hay meadow and tried to put in some clover and timothy, but it grew for a while and then it died out again, and where I had the hay here for four or five years is cat-tails now, and this wild grass growing up.

Mr. GLENN. Was this flooding in 1915 caused by the unusual high water all over the country or was it caused by that dam?

Mr. JACOBS. That I could not say, but I have noticed that when the engineer came to survey there the water was high when he first came in, and I understood the stop log was taken out at Kenora and it dropped a foot and a half or 2 feet in a short time.

Mr. STEENERSON. With reference to these other 100 farmers, that you say you know, can you say generally about how large areas they have under cultivation?

Mr. JACOBS. Well, there is some of them in there have about 40 acres under cultivation.

Mr. STEENERSON. And that is about the highest?

Mr. JACOBS. Yes.

Mr. STEENERSON. And that is usually land cleared of brush and timber?

Mr. JACOBS. Yes.

Mr. STEENERSON. Do you know about the ordinary value of such clearings in that neighborhood?

Mr. JACOBS. Well, they figure about \$60 an acre.

Mr. STEENERSON. The cost of clearing and breaking?

Mr. JACOBS. Yes.

Mr. STEENERSON. You say 40 is about the highest?

Mr. JACOBS. Well, somewhere around there; several of them in there have about 40 acres.

Mr. STEENERSON. How about others?

Mr. JACOBS. Some of them have less.

Mr. STEENERSON. How much less? How does it run?

Mr. JACOBS. Well, it runs from 10 to 15, 20, 25, 30, and 40.

Mr. STEENERSON. So that the average would be about 20 acres apiece?

Mr. JACOBS. Yes.

Mr. STEENERSON. Of these 100 farmers that belong to this club?

Mr. JACOBS. Yes.

Mr. STEENERSON. They have all farm buildings and keep stock, I suppose?

Mr. JACOBS. Yes; they have; some of them have big barns. I know two farmers there have barns that cost them in the neighborhood of \$400 apiece.

Mr. TAWNEY. Where they have only 200 acres cleared?

Mr. JACOBS. Yes; they have stock.

Mr. STEENERSON. Are there any drainage ditches through there?

Mr. JACOBS. There is a ditch around my place which comes out to the bay and half a mile from my house.

Mr. STEENERSON. How does the high water affect that?

Mr. JACOBS. Instead of running out this summer, it was damming back up.

Mr. STEENERSON. What kind of ditch was that?

Mr. JACOBS. That is ditch 24, Judicial Ditch.

Mr. STEENERSON. Do you know how many ditches of that kind there are running into the lake?

Mr. JACOBS. We have ditch 6 running into the lake and ditch 16.

Mr. MIGNAULT. When was the ditch put there?

Mr. JACOBS. It was dug this spring.

Mr. STEENERSON. How many ditches coming in there now?

Mr. JACOBS. There is three now coming into Zippel Bay.

Mr. STEENERSON. How far back do they extend?

Mr. JACOBS. One extends within a mile of Williams.

Mr. STEENERSON. How many miles?

Mr. JACOBS. Well, it is 8 miles.

Mr. STEENERSON. The other ditches are shorter?

Mr. JACOBS. Yes; about 4 miles.

Mr. MIGNAULT. The country is very flat there?

Mr. JACOBS. Well, yes; in a way it is flat.

Mr. STEENERSON. And the rising of the water at the outlet of these ditches is the cause of the backing of the water into them?

Mr. JACOBS. It certainly is.

Mr. STEENERSON. How does it affect the creek that flows in?

Mr. JACOBS. Well, there is a kind of dead water in there and slimy, and forms a kind of scum on the water.

Mr. STEENERSON. It becomes stagnant?

Mr. JACOBS. Yes; and the insects and flies grow there and mosquitoes. I should judge it would be unhealthy in a way.

Mr. STEENERSON. How far back on the creeks and rivers does that condition extend when the water is high?

Mr. JACOBS. Well, it would affect back about 3 miles, anyway.

Mr. TAWNEY. You speak about these farmers having cleared from 10 to 40 acres on their farms. What is the value of the land without any clearing at all around in that neighborhood?

Mr. JACOBS. Well, there has been claims sold close to the bay for \$1,800 without any clearing at all, without a house on.

Mr. STEENERSON. \$1,800 a quarter section?

Mr. JACOBS. Yes.

Mr. TAWNEY. You say there have been lots sold for that?

Mr. JACOBS. Yes.

Mr. TAWNEY. How far back was that located from the lake?

Mr. JACOBS. It comes right into the bay; it is 2 miles from the lake.

Mr. TAWNEY. Is that about the average value of uncleared land down there?

Mr. JACOBS. That is the way it is now, you see, because it has been an uncertainty on account of the water. A lot of people has been waiting in hopes the water would go down, but they get discouraged and pull out.

Mr. ANDERSON. You spoke of one sale. Do you know of any other sales?

Mr. JACOBS. Yes; I know of one piece there that they sold for \$2,300, ten acres cleared.

Mr. ANDERSON. That was how long ago?

Mr. JACOBS. Two years.

Mr. ANDERSON. How much land?

Mr. JACOBS. One hundred and sixty acres.

Mr. ANDERSON. Do you know the number?

Mr. JACOBS. Yes; that was in section 22.

Mr. ANDERSON. How many acres cleared?

Mr. JACOBS. I should judge about 10 acres.

Mr. ANDERSON. How much did that sell for?

Mr. JACOBS. \$2,300.

Mr. ANDERSON. To whom was it sold?

Mr. JACOBS. I think it was to the bank at Roosevelt.

Mr. ANDERSON. Is it still held by the bank?

Mr. JACOBS. No; resold again for \$2,500.

Mr. ANDERSON. When?

Mr. JACOBS. That was about six months afterwards.

Mr. ANDERSON. To whom?

Mr. JACOBS. To a man named Ragnor Anderson.

Mr. ANDERSON. Is he still on it?

Mr. JACOBS. Yes.

Mr. ANDERSON. Still cultivating it?

Mr. JACOBS. Yes.

Mr. ANDERSON. How much has he under cultivation?

Mr. JACOBS. Probably about 30 acres.

Mr. ANDERSON. What kind of crop has he?

Mr. JACOBS. Potatoes, and mostly hay now.

Mr. ANDERSON. How far is that land from the lake?

Mr. JACOBS. The creek runs right up to the lot.

Mr. GLENN. What creek?

Mr. JACOBS. Zippel Creek.

Mr. ANDERSON. You say you filed on your land in 1904?

Mr. JACOBS. Yes.

Mr. ANDERSON. What was the condition of the land as to the water?

Mr. JACOBS. It looked to me that it would be a nice place to build.

Mr. ANDERSON. I am asking you what was the actual condition, as far as water was concerned. Was there any water on the land at the time?

Mr. JACOBS. I guess it was about 2 feet lower than it is now.

Mr. ANDERSON. That does not answer my question. Was there any water on the land?

Mr. JACOBS. No, sir.

Mr. ANDERSON. How far away was it from the lake at that time?

Mr. JACOBS. Two miles.

Mr. ANDERSON. And the nearest boundary of your land was about 2 miles away from the lake?

Mr. JACOBS. Yes.

Mr. ANDERSON. What time in 1904 did you file?

Mr. JACOBS. I filed on the 6th of March, I think it was.

Mr. ANDERSON. What did you do on the land that year?

Mr. JACOBS. I did nothing—I put up a shanty.

Mr. ANDERSON. When did the water commence to come up?

Mr. JACOBS. Well, I think it was in 1905 it was up a little higher.

Mr. ANDERSON. That would be the next year?

Mr. JACOBS. Yes.

Mr. ANDERSON. How much of the land was covered with water in 1905, or was there any?

Mr. JACOBS. Well, I tell you I did not pay much attention to the land in back; I put up a house on it and started a store up in Zippel while I was holding the claim down there.

Mr. ANDERSON. You were more interested in the store at the time than in the farm.

Mr. JACOBS. I had to do something to make a living.

Mr. ANDERSON. Which was it, farming or storekeeping, you paid more attention to?

Mr. JACOBS. Well, in fact I wanted to get a home there and get the home established.

Mr. ANDERSON. In 1905 you do not know how much the water came up; it did come up a little, but you paid very little attention to it.

Mr. JACOBS. That is right.

Mr. ANDERSON. In 1906 did you do anything on the land?

Mr. JACOBS. Well, I cleared some.

Mr. ANDERSON. About how much?

Mr. JACOBS. About an acre and a half.

Mr. ANDERSON. Was there any change in the condition of the water in 1906?

Mr. JACOBS. Well, as to that I could not tell you.

Mr. ANDERSON. What did you do in 1907?

Mr. JACOBS. In 1907 I took a trip to Minneapolis; I proved up; I commuted.

Mr. ANDERSON. But what did you do as far as the land was concerned? Did you do anything on it in 1907?

Mr. JACOBS. That is the year part of it was covered with water.

Mr. ANDERSON. The water came up more than ever?

Mr. JACOBS. Yes.

Mr. ANDERSON. How much was covered with water in 1907?

Mr. JACOBS. You might say nearly all of it.

Mr. ANDERSON. What depth of water was there over it?

Mr. JACOBS. Well, that I could not tell you. I guess the record will tell you how far the water comes. At 1,062 my land is pretty nearly all covered with water.

Mr. ANDERSON. I am speaking of 1907?

Mr. JACOBS. That is about the year I am telling you that it was high.

Mr. ANDERSON. Your land was nearly all covered?

Mr. JACOBS. Yes.

Mr. POWELL. The record here is about a foot lower than in 1905.

Mr. JACOBS. I think it was in 1907.

Mr. ANDERSON. How much of your land was above the water in 1907? How much was dry land in 1907?

Mr. JACOBS. I could not tell you that.

Mr. ANDERSON. Up to that time you had not done any cultivation on it?

Mr. JACOBS. I had put in some garden stuff on it.

Mr. ANDERSON. In 1908 what was the condition of the water?

Mr. JACOBS. I do not know; I do not remember. I understood it was pretty high that year.

Mr. ANDERSON. Did you do any cultivation on the land in 1908?

Mr. JACOBS. Well, I done a little clearing every year.

Mr. ANDERSON. I mean cultivating.

Mr. JACOBS. Well, I cultivated for the use of the house—vegetables.

Mr. ANDERSON. But apart from vegetables, when did you first sow any crop on that land except vegetables?

Mr. JACOBS. I think it was in 1911.

Mr. ANDERSON. What kind of crop did you have in then?

Mr. JACOBS. I put a little oats in to see how it would grow.

Mr. ANDERSON. How many acres of oats did you have?

Mr. JACOBS. Not more than about half an acre.

Mr. ANDERSON. What else did you grow?

Mr. JACOBS. I put in about an acre of potatoes.

Mr. ANDERSON. Anything else?

Mr. JACOBS. Well, I tried a little corn—a small patch of corn—probably about an eighth of an acre.

Mr. ANDERSON. You sowed oats, potatoes, and corn in it?

Mr. JACOBS. Yes.

Mr. ANDERSON. Did you have a good crop of each?

Mr. JACOBS. Yes.

Mr. ANDERSON. Where was that land cultivated?

Mr. JACOBS. That was in lot 3, right around the house.

Mr. ANDERSON. The house was built on the highest part of the land?

Mr. JACOBS. Yes.

Mr. ANDERSON. Then all together you had less than 2 acres under crop in 1911?

Mr. JACOBS. Yes.

Mr. ANDERSON. In 1912 what did you do?

Mr. JACOBS. Well, I will tell you I did not cultivate any more. I just used the same place—manured it and used it.

Mr. ANDERSON. The same as in 1911?

Mr. JACOBS. Yes.

Mr. ANDERSON. In 1912 you cultivated that?

Mr. JACOBS. Yes.

Mr. ANDERSON. And had a good crop on it?

Mr. JACOBS. Yes.

Mr. ANDERSON. In 1913?

Mr. JACOBS. Well, that is about the same; I just cleared some other land back of the store.

Mr. ANDERSON. Have you cultivated any more land than that 2 acres—I mean sown crops and potatoes and oats and peas?

Mr. JACOBS. No; it was impossible to cultivate any more on account of the uncertainty of the water.

Mr. ANDERSON. You said that in 1907 the water was the highest of any year during your experience, except this year?

Mr. JACOBS. Well, I thought it was.

Mr. ANDERSON. This year it is about the same as it was in 1907?

Mr. JACOBS. Yes.

Mr. ANDERSON. And did you have any crop in this year?

Mr. JACOBS. Yes.

Mr. ANDERSON. How much?

Mr. JACOBS. I had some potatoes; I made a ditch all around the garden, and I made hills up around and put the corn and potatoes in the hills.

Mr. ANDERSON. I want to know how much meadow you had in this year?

Mr. JACOBS. I had about the same this year.

Mr. ANDERSON. You had some oats?

Mr. JACOBS. No oats.

Mr. ANDERSON. Just corn and potatoes?

Mr. JACOBS. And tomatoes and cabbage.

Mr. ANDERSON. How many acres of potatoes had you in this year?

Mr. JACOBS. About an acre.

Mr. ANDERSON. You have not taken them up?

Mr. JACOBS. No.

Mr. ANDERSON. Is it a good crop?

Mr. JACOBS. It seems to be fair.

Mr. ANDERSON. You say that in 1910 you sold 4 acres of your land?

Mr. JACOBS. Not 4 acres.

Mr. ANDERSON. What was it?

Mr. JACOBS. About 3 acres.

Mr. ANDERSON. What was it sold for? For what purpose?

Mr. JACOBS. I thought you said "sowed." It was sold for a man to put up a house on one side when he brought a mill out.

Mr. ANDERSON. And he paid you \$50?

Mr. JACOBS. Yes.

Mr. ANDERSON. Cash?

Mr. JACOBS. No; he did work for me.

Mr. ANDERSON. You say there are 100 farmers settled in your neighborhood?

Mr. JACOBS. Just about.

Mr. ANDERSON. And I understood you to say—but I may have been mistaken as to that—that on the average they would have about 20 acres of land each, cultivated or cleared, which?

Mr. JACOBS. Well, cultivated.

Mr. ANDERSON. That would mean, in your settlement, that there are 2,000 acres of land cultivated?

Mr. JACOBS. Well, cultivated and sowed into hay afterwards, I suppose. I could not tell you as to that.

Mr. ANDERSON. I want to get some idea as to the condition. When you say cultivated, what do you mean by that?

Mr. JACOBS. Well, I mean the land that is cleared up and either put into hay or else into grain.

Mr. ANDERSON. Then this year there are 2,000 acres of land in your neighborhood, there, either sown in hay or grain?

Mr. STEENERSON. I suppose that includes vegetables and garden, and everything?

Mr. JACOBS. Yes.

Mr. ANDERSON. Cultivated land on which crops are growing; that is what you mean?

Mr. JACOBS. Yes.

Mr. ANDERSON. That, of course, is a mere approximation on your part?

Mr. JACOBS. I am just guessing at it, because I have not been over everybody's place to see what they have.

Mr. ANDERSON. Eliminating hay, about how many acres would you say this year are under other crops? Can you give me any idea as to that?

Mr. JACOBS. No; I could not; there is some of the farmers in here from our district could tell you more about that.

Mr. ANDERSON. You say your land was 2 miles away from the lake, and now the lake is right up over your land.

Mr. JACOBS. Yes.

Mr. ANDERSON. When did that condition of affairs first exist? When was it that the 2 miles disappeared?

Mr. JACOBS. Well, it was washed away gradually every year.

Mr. ANDERSON. In what year was it that the 2 miles were finally washed away?

Mr. JACOBS. Well, that I could not tell you.

Mr. ANDERSON. How far back from the lake does the settlement extend which embraces these hundred settlers?

Mr. JACOBS. Three townships.

Mr. STEENERSON. I do not think the witness understands. That would be 18 miles from the lake.

Mr. JACOBS. I mean three townships that belong to it.

Mr. STEENERSON. He asked you how far these settlers were from the lake. How far are their homes from the lake?

Mr. JACOBS. About 5 miles.

Mr. ANDERSON. The farthest?

Mr. JACOBS. Yes.

Mr. ANDERSON. But they embrace how many townships?

Mr. JACOBS. Three.

Mr. ANDERSON. What ones?

Mr. JACOBS. Chilgrain, Prosper, and Zippel.

Mr. GLENN. How far from the lake is this land that you say sold for \$2,300, in 22?

Mr. JACOBS. About 3 miles.

Mr. POWELL. From the lake where it at present is?

Mr. JACOBS. No; where it was at that time.

Mr. TAWNEY. Where is it now?

Mr. JACOBS. It is right up to the shore.

Mr. TAWNEY. But I am speaking of this piece of land; how far is it from the lake?

Mr. JACOBS. It is the same distance.

Mr. TAWNEY. How far from Zippel post office.

Mr. JACOBS. Three miles.

Mr. TAWNEY. At the present time?

Mr. JACOBS. Yes.

Mr. GLENN. Look at this map and show where your 2 miles was washed away. [The witness points out land on the map.] Your land is not washed away at all?

Mr. JACOBS. No; it is not washed away.

Mr. ANDERSON. The water comes up and down; it is affected by various things, by the wind and by the high water——

Mr. JACOBS. Since the lake shore washed away it is affected every time they have a north or east wind.

Mr. ANDERSON. At some seasons there is more water than others?

Mr. JACOBS. Yes.

Mr. ANDERSON. And the water fluctuates in different seasons?

Mr. JACOBS. Yes; it has in the last few years.

Mr. STEENERSON. How was it before the shore washed away?

Mr. JACOBS. Well, the wind did not affect my place to amount to anything; there was no water washed back in.

Mr. ANDERSON. The old shore acted as a breakwater protection?

Mr. JACOBS. Yes.

Mr. POWELL. What was the old shore, just a ridge of sand?

Mr. JACOBS. Yes.

Mr. POWELL. And then there was marsh or bog inside of it?

Mr. JACOBS. Yes; we used to walk clear up to the fishery, or Curriers Point, and there were great high banks up there where the steamboats went there, and now it is washed away.

Mr. GLENN. Zippel post office is still left there?

Mr. JACOBS. Yes; but there is great big rocks in front of it that protected it.

Mr. WYVELL. I have just consulted the records of the engineers and find that the last of June and the first two weeks of July the water stood nearly 1062; was that the time the water was the highest around your place?

Mr. JACOBS. This year?

Mr. WYVELL. Yes.

Mr. JACOBS. Yes.

Mr. WYVELL. And at that time did it nearly cover all your place?

Mr. JACOBS. Yes.

Mr. WYVELL. And came up close to your house?

Mr. JACOBS. Yes.

Mr. WYVELL. I am using that as a basis, because it is the nearest high water we have.

Mr. JACOBS. At that stage of the water my place would be useless, and I would have to get out.

Mr. ROCKWOOD. Were you one of the first that homesteaded in there?

Mr. JACOBS. No; several had homesteaded in there before me.

Mr. ROCKWOOD. About how many?

Mr. JACOBS. Well, there were probably about a dozen or so.

Mr. ROCKWOOD. Do you know when they began to go in there?

Mr. JACOBS. Yes; Mr. Zippel in 1898; I think that was when it was opened, and there is old Mr. Grovan; I think he filed in 1900; and I guess a fellow by the name of Sterean filed there.

Mr. ROCKWOOD. Did they come rapidly from the time you came in, from 1900 forward, or when did they begin to come in rapidly?

Mr. JACOBS. Well, after I started in there I was acquainted with several of them from the States, and they came up, a few settlers every year, from that on. I guess this year there is not much land left in there; there is the Government preserves.

Mr. ROCKWOOD. Were there any buildings on this piece that sold first for \$2,300 and then \$2,500?

Mr. JACOBS. There was a log building, and I guess a long barn.

Mr. ROCKWOOD. Log house and log barn?

Mr. JACOBS. Yes.

Mr. ROCKWOOD. Do you know a sale made by a Mr. Nigh?

Mr. JACOBS. No.

Mr. ROCKWOOD. Do you know of any other sales than the ones you have spoken about it?

Mr. JACOBS. No.

TESTIMONY OF BERNARD A. ARNESEN.

(Bernard A. Arnesen, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. ARNESEN. At Arnesen, Minn., formerly called Rocky Point, also called to-day. It is the post office.

Mr. STEENERSON. Arnesen is the name of the post office?

Mr. ARNESEN. Yes.

Mr. STEENERSON. Named after you?

Mr. ARNESEN. Yes.

Mr. STEENERSON. And otherwise known as Rocky Point?

Mr. ARNESEN. Yes.

Mr. STEENERSON. What the navigators call it?

Mr. ARNESEN. Yes.

Mr. STEENERSON. How long have you been there?

Mr. ARNESEN. My first occupation there was in 1897, in July.

Mr. STEENERSON. Eighteen years ago?

Mr. ARNESEN. Yes.

Mr. STEENERSON. What have you been engaged in during those 18 years?

Mr. ARNESEN. Mostly fishing industries.

Mr. STEENERSON. Have you also been engaged in farming?

Mr. ARNESEN. Yes, to a certain extent.

Mr. STEENERSON. I will ask you about fishing later on. I want to know if you are well acquainted with the quality of the soil there?

Mr. ARNESEN. Yes.

Mr. STEENERSON. Have you cultivated some?

Mr. ARNESEN. Part of it.

Mr. STEENERSON. You have cultivated some?

Mr. ARNESEN. Yes.

Mr. STEENERSON. For how many years back?

Mr. ARNESEN. From the time, say from 1898.

Mr. STEENERSON. You have some land there?

Mr. ARNESEN. Yes.

Mr. STEENERSON. How much land?

Mr. ARNESEN. I have got 120 acres bordering on the lake shore.

Mr. STEENERSON. What is the description of it?

Mr. ARNESEN. My buildings are in lot 4, section 5; 163, 34 range; the balance is lots 1, 2, and southeast quarter of the northwest quarter of section 8.

Mr. STEENERSON. One hundred and twenty-eight acres.

Mr. ARNESEN. Yes; but there is not that now; there was at the time of the survey.

Mr. STEENERSON. How was that land when you came with reference to being cleaned or covered with brush or timber or otherwise?

Mr. ARNESEN. Partly bordering the lake was hay meadows, where we gathered our hay for stock.

Mr. STEENERSON. Natural wild hay.

Mr. ARNESEN. Yes.

Mr. STEENERSON. What was the rest of it?

Mr. ARNESEN. Mostly timber, poplar and all that.

Mr. STEENERSON. How much of that timber land and brush land have you cleared?

Mr. ARNESEN. About five acres.

Mr. STEENERSON. And what is the cost of the clearing of that land per acre?

Mr. ARNESEN. The cost of clearing, doing part of it myself, can not be considered very much, as some of our time ain't very much worth, but what I paid for, it cost me \$30 an acre to cut down and brush burned, and the grubbing is considered at least worth, by piling stumps up, no man will do it, we can not get anybody to do it under from \$20 to \$25 up to \$30 an acre.

Mr. STEENERSON. That would be altogether how much?

Mr. ARNESEN. Altogether, I should judge, take it on a general rule, from \$40 to \$50.

Mr. STEENERSON. \$50 an acre?

Mr. ARNESEN. Yes.

Mr. STEENERSON. Is it good soil?

Mr. ARNESEN. The best there is; it has black loam on it and clay subsoil underneath.

Mr. STEENERSON. What kind of crops have you laid?

Mr. ARNESEN. Mostly vegetables, some corn, and a little timothy and clover.

Mr. STEENERSON. How does the timothy and clover grow?

Mr. ARNESEN. Very fine; the best there is.

Mr. STEENERSON. How was this land with reference to the lake and water when you first came there?

Mr. ARNESEN. Why, when I first came there, if I am allowed to explain myself a little, I will state, the reason I first came there was on account of being flooded out over at Zippel Bay, at the fishery—

Mr. STEENERSON. Just answer the questions. I do not care about the reasons; they can ask about them. How was it when you first came there? Was it high and dry? Was it flooded or not flooded?

Mr. ARNESEN. This line was bordering on the lake with a big part of my land, and part of it was low, as we call it, natural meadow land; part of this was flooded at the time I came here, being the high-water stage in 1897. Being washed out with the high water, the fences are naturally falling down and washing away; how many acres are washed out, I am not able to state, as I have not had it surveyed yet.

Mr. STEENERSON. Some of your land has washed away?

Mr. ARNESEN. Yes; taking some of the buildings—taking an ice house, which I had to remove entirely.

Mr. STEENERSON. How many rods has it encroached upon the land?

Mr. ARNESEN. Well, from 1 to 4 and 5 in places.

Mr. STEENERSON. Has this cultivated land of your been affected by the high water lately?

Mr. ARNESEN. Yes; it has washed out part of the cultivated land also.

Mr. STEENERSON. When that was acquired first, was it under water?

Mr. ARNESEN. No, sir.

Mr. STEENERSON. It was above water—dry?

Mr. ARNESEN. Yes; it would be in a bank.

Mr. STEENERSON. What can you say about the value of your land?

Mr. ARNESEN. This summer Attorney Wilkes, of Minneapolis, came up for the reason of buying an adjoining claim. His price that was offered to him was \$3,500.

Mr. GLENN. How many acres?

Mr. ARNESEN. Practically 160 acres.

Mr. STEENERSON. That may be evidence of the value; but I was asking you of your own judgment. That was your neighbor?

Mr. ARNESEN. Yes.

Mr. STEENERSON. Land in that vicinity?

Mr. ARNESEN. Yes.

Mr. STEENERSON. You had better buildings than he had?

Mr. ARNESEN. There were no buildings whatever.

Mr. STEENERSON. I asked you about your own estimate of the value of the land.

Mr. ARNESEN. Providing I would sell.

Mr. STEENERSON. Yes. You do not want to sell?

Mr. ARNESEN. No. This man asked me what I considered it was worth, and I told him at that time I would not sell, under any consideration, under \$5,000.

Mr. MAGRATH. How many acres did that represent.

Mr. ARNESEN. It was at the time of my filing 128 acres—fractional parts.

Mr. STEENERSON. How much is left of it now?

Mr. ARNESEN. I can not say, sir.

Mr. STEENERSON. But you have a judgment; you are occupying it?

Mr. ARNESEN. I should judge there is at least, probably, 1 or 2 or 3 acres gone.

Mr. STEENERSON. And if this high water is maintained as high as it was last June, how much of your land would be affected—submerged?

Mr. ARNESEN. All of it bordering on the lake.

Mr. STEENERSON. How many acres?

Mr. ARNESEN. About 15.

Mr. STEENERSON. Does that include this cleared land?

Mr. ARNESEN. Yes.

Mr. STEENERSON. That would be all destroyed?

Mr. ARNESEN. It would be washed out; yes.

Mr. STEENERSON. Are you acquainted with the settlers and farmers in that neighborhood?

Mr. ARNESEN. Yes, sir; I am.

Mr. STEENERSON. Are there many settlers in that vicinity, along the lake shore?

Mr. ARNESEN. Along the lake shore there is not very many on account of it being very low and the water has in effect drove part of the settlers out.

Mr. STEENERSON. There were some of the settlers who have been driven out by the high water?

Mr. ARNESEN. Yes.

Mr. STEENERSON. How many of them?

Mr. ARNESEN. I should judge in the neighborhood of 10.

Mr. STEENERSON. And their claims are now worthless?

Mr. ARNESEN. To my estimation they are.

Mr. STEENERSON. They are not used for anything?

Mr. ARNESEN. No.

Mr. STEENERSON. On account of the high water?

Mr. ARNESEN. Yes.

Mr. STEENERSON. These other farmers are further back?

Mr. ARNESEN. Yes.

Mr. STEENERSON. How much, as a rule, does each one cultivate? How much have they cleared?

Mr. ARNESEN. We have farms in there cleared up to 20 and 30 acres.

Mr. STEENERSON. How would they average?

Mr. ARNESEN. They would average about 5, all told.

Mr. STEENERSON. How far are they, about, from the shore?

Mr. ARNESEN. Some of them are about half a mile; some of them a mile.

Mr. STEENERSON. Does this high stage of water affect them?

Mr. ARNESEN. Yes, sir; it does.

Mr. STEENERSON. To what extent?

Mr. ARNESEN. To the extent of their land bordering down to this low land, which is hay land; consequently it stops them cutting and mowing this hay for their stock.

Mr. STEENERSON. They would be all more or less affected by maintaining the high level?

Mr. ARNESEN. Yes.

Mr. STEENERSON. Damaged?

Mr. ARNESEN. Yes.

Mr. STEENERSON. I suppose you could not give the amount?

Mr. ARNESEN. No.

Mr. ROCKWOOD. When did homesteading begin for farming purposes?

Mr. ARNESEN. This Government land was opened in 1898, the 5th of October, and from that on it started.

Mr. ROCKWOOD. How many farmers do you say there are in the neighborhood?

Mr. ARNESEN. Offhand I could not give you them all.

Mr. ROCKWOOD. About how many?

Mr. ARNESEN. About 12. We had in our town 24 legal voters at our annual town meeting, and that is all I can go on.

Mr. ROCKWOOD. You say they began in 1898; did most of the 12 come there about that time or later?

Mr. ARNESEN. No; later.

Mr. ROCKWOOD. When did most of them come?

Mr. ARNESEN. Most of them came in the years 1899 and 1900.

Mr. ROCKWOOD. How many years ago?

Mr. ARNESEN. It is about 15 years ago.

Mr. ROCKWOOD. When did you enter yourself?

Mr. ARNESEN. I put in a contest and entry at the same time in November, the time of the opening.

Mr. ROCKWOOD. You made your entry in 1898?

Mr. ARNESEN. 1898, when the land was opened.

Mr. TAWNEY. When was it you cleared that 5 acres?

Mr. ARNESEN. Well, those were cleared gradually, as I went along.

Mr. TAWNEY. From time to time during the 18 years?

Mr. ARNESEN. Yes.

Mr. TAWNEY. And you estimate the cost of clearing to be about \$60 an acre?

Mr. ARNESEN. According to what I have to pay; I pay \$30 an acre for having the timber cut into wood or whatever I wanted and the brush piled and burned.

Mr. TAWNEY. During that time, as a matter of fact, you could have obtained good agricultural lands anywhere in Roseau County, without any necessity for clearing, at a price anywhere from \$7 to \$10 an acre?

Mr. ARNESEN. Yes.

Mr. GLENN. You say that in 1915 a man came and asked you to sell your land, and you told him you would not take less than \$5,000

for the 128 acres—what was left. Now, what would it have been worth if there had not been any water over it?

Mr. ARNESEN. I consider it would be worth considerably more.

Mr. GLENN. How much?

Mr. ARNESEN. Well, really I could not say what more.

Mr. GLENN. Would it have been worth any more?

Mr. ARNESEN. Oh, certainly.

Mr. GLENN. How much?

Mr. ARNESEN. It would be worth \$1,000 more.

Mr. POWELL. You think the injury is about \$8 an acre?

Mr. ARNESEN. To my land?

Mr. POWELL. Yes.

Mr. ARNESEN. Why, more or less.

Mr. MIGNAULT. Do you pay taxes on your land?

Mr. ARNESEN. Yes.

Mr. MIGNAULT. Do you know how much your land is assessed at?

Mr. ARNESEN. Yes.

Mr. MIGNAULT. What is the amount of the assessment? What is your land valued at for the purposes of taxation?

Mr. ARNESEN. It is valued in our town at \$1,200.

Mr. MIGNAULT. For how many acres?

Mr. ARNESEN. One hundred and sixty acres, based on the valuation by the town council.

Mr. MIGNAULT. That includes whatever buildings are on the property?

Mr. ARNESEN. No.

Mr. MIGNAULT. The buildings are valued apart?

Mr. ARNESEN. Yes.

Mr. MIGNAULT. The land is valued at \$1,200 and the building at how much?

Mr. ARNESEN. The buildings are valued according to their value.

Mr. MIGNAULT. How much are your buildings valued at?

Mr. ARNESEN. At present I could not replace them at least for—

Mr. MIGNAULT. For the purposes of taxation, how much are your buildings valued at?

Mr. ARNESEN. The taxable valuation was \$250.

Mr. ROCKWOOD. Was that the whole farm?

Mr. ARNESEN. No; the assessed valuation on the improvements, in assessing buildings, or, rather, structures.

Mr. ROCKWOOD. What was your total valuation of the buildings and land?

Mr. ARNESEN. I think in the neighborhood of \$800.

Mr. POWELL. Where does the \$1,200 come in?

Mr. ARNESEN. This is based on a $33\frac{1}{3}$ per cent basis, and the State takes that. The true and full value, according to the assessment valuation, was \$1,200, but that was not the assessment value; but from the \$1,200 was based the $33\frac{1}{3}$ per cent.

Mr. ROCKWOOD. Which was taken off?

Mr. ARNESEN. Yes; it was taken off.

Mr. TAWNEY. They assessed on a basis of $33\frac{1}{3}$ per cent of the actual value?

Mr. ARNESEN. Yes.

Mr. ROCKWOOD. Mr. Powell's question, I thought, suggested an inaccurate understanding. The statute of our legislature provides

that land shall be first valued at its full and true value, and then the assessed value, for the purpose of taxation, shall be one-third of that; two-thirds is taken off; it is reduced to one-third, for the purpose of taxation, the agricultural land. I understand Mr. Arnesen to mean—and I would like to have him make it clear—that the full and true value, as fixed by the assessors in that town, generally speaking, is \$1,200 for 160 acres; am I right?

Mr. ARNESEN. Well, on different parcels.

Mr. ROCKWOOD. Well, generally speaking.

Mr. ARNESEN. Yes.

Mr. POWELL. How far are you from the railways?

Mr. ARNESEN. Twelve miles from Roosevelt, and about 12 miles from the other road.

TESTIMONY OF C. A. BARNES.

(C. A. Barnes having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. BARNES. Prosper Township, Beltrami County.

Mr. STEENERSON. How far is that from Zippel?

Mr. BARNES. About two miles and a half; well, to Zippel post office is about two and a half miles, and also about two and a half miles from the store.

Mr. STEENERSON. You have a piece of land there?

Mr. BARNES. I have filed on a claim there.

Mr. STEENERSON. How much?

Mr. BARNES. One hundred and sixty acres.

Mr. STEENERSON. Where is it located.

Mr. BARNES. Section 33, township 163 north, range 33 West Pit, the northeast quarter.

Mr. STEENERSON. Northeast quarter of section 33?

Mr. BARNES. Yes; it is the northeast quarter of 33, 163 north, 33 West Pit.

Mr. STEENERSON. What improvements have you made on it?

Mr. BARNES. I have made no improvements on it yet, except to clear off a very small piece getting ready to build a house.

Mr. STEENERSON. You have cleared off some?

Mr. BARNES. Yes.

Mr. STEENERSON. What is the nature of the soil there? Is it prairie or meadow or timber or brush, or what is it?

Mr. BARNES. It is brush land, covered with small spruce, tamarac, some small cedar, and some willow.

Mr. STEENERSON. Have you built any house?

Mr. BARNES. Not yet. I am preparing to build now; in fact, should be ready to build if I was not attending here. I intended to build earlier, but could not on account of the conditions that existed.

Mr. STEENERSON. What area have you cleared?

Mr. BARNES. I could not say exactly; anywhere from a quarter to half an acre.

Mr. STEENERSON. Do you know anything about the cost of clearing per acre? If you do not it is all right.

Mr. BARNES. Well, I can give a little estimate of that from the fact that the clearing of the right of way for the roads there was esti-

mated by the engineer all the way from \$35 to \$75 an acre; that included grubbing about two-thirds of the right of way.

MR. STEENERSON. What would you say is the cost of clearing that land?

MR. BARNES. I should say that to have that land cleared and grubbed would cost about \$50 to \$60 an acre; that is merely a conjecture, a matter of judgment.

MR. STEENERSON. Have you examined the quality of the soil there?

MR. BARNES. Yes.

MR. STEENERSON. Have you observed what kind of crops they have raised?

MR. BARNES. To a great extent.

MR. STEENERSON. I suppose that in estimating land values of land that is cleared, you add to the value of the land in that addition the cost of clearing?

MR. BARNES. Well, there might be a great many things to be taken into consideration.

MR. STEENERSON. Well, that is one of the elements?

MR. BARNES. Yes. Of course, getting right down to the business proposition, the cost of clearing would naturally lessen the value of land, unless there is something else to offset it.

MR. STEENERSON. But after the clearing is done, the land is worth more?

MR. BARNES. Yes, certainly.

MR. STEENERSON. Have you observed the lake water with reference to your land?

MR. BARNES. Well, I had a chance to observe it a little bit when I went over there along—I can not give the exact date at the present time, but the latter part of May or along in June some time, to begin to get ready to build, and cleared off a little place.

MR. STEENERSON. What was your observation with reference to the land being affected further in than the mark, where it was actually submerged, under water?

MR. BARNES. Well, I find that under the moss, all over my quarter section, and, in fact, all over that section, the water was right up under the moss, right up on top of the ground; it was not submerged, any that you could see water.

MR. STEENERSON. It looked dry?

MR. BARNES. It looked dry, to look at, but when you come to step on it you would go down through the moss and over your boot tops, and high top boots at that. When I cleared off this little patch, I stood in water to clear it.

MR. STEENERSON. Have you been on it since the water raised some?

MR. BARNES. Yes, I was on it the other day.

MR. STEENERSON. Is it dry now?

MR. BARNES. It is in very nice condition at the present time.

MR. STEENERSON. If it remained in that dry condition, would it be valuable for agriculture?

MR. BARNES. Absolutely so, yes.

MR. STEENERSON. What, in your judgment, would be the value of this land if the water kept at a level, so that it did not overflow?

MR. BARNES. That is something that is hard to say. Values in that part of the country, as I look at it, have not been adjusted.

Mr. STEENERSON. There really is no value up there, but you have some idea of it?

Mr. BARNES. I consider every acre of that land up there worth at least \$100 an acre, when it is cleared. I do not know if I had the patent in my pocket to-day, that I would consider an offer of \$100 an acre.

Mr. STEENERSON. That it would be worth more?

Mr. BARNES. It would not be a question of what it was worth for actual selling it, but whether I wanted to sell it.

Mr. STEENERSON. Do you regard it as a desirable place to live?

Mr. BARNES. I do. I want to make a home of it, and I think the majority of people up there, those I have met this summer, consider that their home; their places are not for sale.

Mr. ROCKWOOD. When did you file?

Mr. BARNES. In April, last spring.

Mr. ROCKWOOD. Where did you live previously?

Mr. BARNES. Well, I had made my headquarters, my home, in St. Paul for about four years.

Mr. ROCKWOOD. What business?

Mr. BARNES. I have been traveling.

Mr. ROCKWOOD. Commercial traveling?

Mr. BARNES. Well, for about 16 years; yes; but the last two years I have been working for a land company selling land and soliciting business for a land company.

Mr. ROCKWOOD. What company?

Mr. BARNES. The John L. Watson Land Co., of Winnipeg.

Mr. ROCKWOOD. Selling Canadian lands?

Mr. BARNES. Yes; working in the United States.

Mr. ROCKWOOD. What brought your attention to this land?

Mr. BARNES. Well, through a friend of mine, whose father was up here, and he came up and filed on a piece, and I had it in my mind to file on a piece of land for a number of years. I knew in a general way about climatic conditions, and so on, in Canada, while I had never been here, and I made up my mind if it suited me I would come up and file on a piece.

Mr. ROCKWOOD. How deep is the moss you speak of?

Mr. BARNES. It will run varying depths through the woods.

Mr. ROCKWOOD. On your land?

Mr. BARNES. It is in varying depths on my land; in some places there is very little else, but, speaking generally, through the timber, you will find 12 to 16 inches of moss.

Mr. ROCKWOOD. And the tamarac and spruce are small?

Mr. BARNES. It is small.

Mr. ROCKWOOD. How tall?

Mr. BARNES. Oh, it would be hard to say. I suppose there is lots of 20 and probably 30 foot poles there, but, on an average, I would say that that which is large enough to be called poles would not run over 4 or 5 inches.

Mr. ROCKWOOD. And a good deal of it down to 1 inch, 6 or 8 feet high?

Mr. BARNES. Small stuff; it is ordinarily known as brush land; there is practically no merchantable timber on the place at the present time.

Mr. POWELL. It would be very easily cleared?

Mr. BARNES. Well, it is thick enough so that it would not be any too easily cleared.

Mr. ROCKWOOD. Is it not true that underneath the moss the roots run through and through, so that when you put a shovel down into the ground anywhere you are likely to strike the roots of those tamaracs and spruces?

Mr. BARNES. Well, they run through the ground more or less, of course; it takes a long time to clear a piece. I find this tamarac and spruce land is very much easier cleared, from my observation, than some hardwood lands. My previous observation of that kind has been mostly in Michigan and Illinois, where it was worse wilderness than it was in this country, and they have cleared it off, and their lands are worth \$450 to \$500 an acre.

Mr. TAWNEY. What kind of land?

Mr. BARNES. Agricultural lands.

Mr. ROCKWOOD. This moss has not grown in the last two years?

Mr. BARNES. I do not know.

Mr. ROCKWOOD. It has been moss land for a great many years?

Mr. BARNES. I do not know.

Mr. ROCKWOOD. Have you had experience in that kind of land, so that you could form any opinion of that?

Mr. BARNES. No; only judging from what others have done here and seeing the soil underneath the moss.

Mr. ROCKWOOD. But they have not grown the moss?

Mr. BARNES. I do not know anything about the formation of it, how long it has taken to form it, or anything about it. The moss is the least of our trouble up here. We are not worrying about it.

Mr. ROCKWOOD. That moss did not grow on dry ground?

Mr. BARNES. Well, I do not know.

Mr. ROCKWOOD. Well, now, just be perfectly frank.

Mr. BARNES. I know my experience is that it was not growing on dry ground this year.

Mr. ROCKWOOD. Have you ever seen that kind of moss growing of that depth from 6 to 16 inches except in a ground that was permanently damp and wet?

Mr. BARNES. You take ground that is shaded, it is usually damp, and there is where moss usually comes.

Mr. ROCKWOOD. Will you answer my question?

(Question read.)

Mr. BARNES. I never saw very much moss growing except where it was quite heavily shaded ground, and heavy shaded ground is usually damp and wet.

Mr. ROCKWOOD. Are you able to answer the question; yes or no? Yes or no will answer it.

Mr. BARNES. I really believe that, for the purposes of information to the commission, the question is answered. However, I will leave that to the chairman.

Mr. TAWNEY. He said he scarcely ever saw moss grow except where it was shady, and usually there it was wet and damp.

Mr. ROCKWOOD. Don't you know, as a fact, that through northern Minnesota there are thousands and thousands of acres on which that kind of moss grows, where there are some of these small stunted

spruce and tamarac, but not enough to make any perceptible shade at all?

Mr. BARNES. Well, a spruce tree casts quite a bit of shade, and I do not see any of that moss growing in the open spaces where the sun can get to it—the sun and the air.

Mr. ROCKWOOD. Have you not seen in northern Minnesota thousands of acres of open muskeg land where the sun shines, where there are not sufficient trees to cast any perceptible shade, and where this moss was growing?

Mr. BARNES. No, sir.

Mr. ROCKWOOD. This is what is called muskeg land, generally speaking, in northern Minnesota—the kind of land you describe as muskeg land.

Mr. BARNES. I would not call my land muskeg land. It is what is called muskeg along the border of it and between my place and the lake. Mine comes right up to the edge of that, but that is not moss. It is a coarse grass, and the top soil, what they call the muskeg here, is similar to the other soil, but it is soaked with water all the time. It is covered with wire grass and that kind of thing.

Mr. ROCKWOOD. Do you know whether or not moss from 6 to 16 inches deep is the characteristic of what is commonly called muskeg land in northern Minnesota. Do you know or do you not?

Mr. BARNES. Well, I will say that I do not know that. There are different kinds of moss and different varieties. There might be a moss that grows in the muskeg. I never investigated it much. It is not nice stuff to investigate when the water is standing over it.

Mr. ROCKWOOD. Had you any experience in northern Minnesota lands before you took this claim?

Mr. BARNES. Only in a general way. I believe, for my own satisfaction, that I have had experience enough in land so that I know good land when I see it.

Mr. ROCKWOOD. Has your experience been in northern Minnesota?

Mr. BARNES. Not so very much.

Mr. ROCKWOOD. Were you around in the neighborhood of this land for some time before you filed?

Mr. BARNES. Not a very great while.

Mr. ROCKWOOD. Were you there long enough to hear trouble was brewing in reference to this matter?

Mr. BARNES. No, sir; at the time I filed I knew nothing about it. In explanation of that I will simply say that it was my own fault. I was something like the land buyer, when a man goes out to buy land, it was not brought to my attention. I had read it in the papers probably that there was a controversy, but probably did not give it any attention; but I had a piece of land that just suited me and the frost was in the ground and I did not realize how deep it could go and it looked good to me, and the conditions were right and I went and filed on it and I have been better pleased with it every day, except that the high water proposition does not suit me and I find it injures it.

Mr. ROCKWOOD. How much was it above the actual level of the lake when you filed?

Mr. BARNES. I can not give the exact measurements; no, I can not say what the measurements were.

Mr. ROCKWOOD. How much did the level of the lake rise between the time you filed and the highest point?

Mr. BARNES. Not being able to say what the height of the lake was when I filed I can not say; we have the reports of the engineers showing on the maps and I can tell by that and the marks along the edge of my land where the water went to and that is actually submerged.

Mr. ROCKWOOD. You filed on a piece of land that had an inherent value of \$100 an acre and you saw the lake?

Mr. BARNES. Which I considered, being close to the lake, makes it worth a thousand or two or three thousand more; that is, as a matter of personal sentiment, as a home.

Mr. ROCKWOOD. You knew that it was so near the level of the lake that the eye could not measure the difference between the level of the lake—

Mr. BARNES. I did not particularly try to measure the difference. The lake was some ways out there and I saw timber growing, and timber does not usually grow right up out of the water. I do not think that was covered with water when that timber was growing there.

Mr. ROCKWOOD. When you filed did you or did you not think it was substantially on the level of the lake?

Mr. BARNES. No, sir; I did not.

Mr. POWELL. Explain fully what you mean by filing, whether the land goes gratuitously to the settler, or whether it is an upset price? It is something I do not know anything about.

Mr. STEENERSON. This land is what we call ceded Chippewa land. It is ceded under the act of 1890.

Mr. POWELL. What is is?

Mr. STEENERSON. It was Indian land, ceded by the Chippewa Indians, and on condition, or on trust, that the United States should dispose of it under the homestead law if it was agricultural land, and if it was pine land it was to be sold at an estimated value of the timber, and this was classified as agricultural land and it goes as homestead, subject to the payment of \$1.25 an acre. It is not freehold. The man who gets title to the land under the law must be a qualified homesteader; he must live on the land five years and make it his home and pay \$1.25, which goes to the Chippewa Indians, and he must make improvements, and he must pay all the ditch taxes and all that kind of thing. All this land is not Government land, because, although the title is in the United States, it is Indian land, and it must be sold at the estimated price of the land.

Mr. GLENN. You say you would not take \$100 an acre for the land to-day?

Mr. BARNES. I do not know that I would; I am not in a position to place a price on it, but I consider any good farming land has an ultimate value of \$100 an acre, and if they are raising ordinary crops on land here, where it is properly cultivated, it will pay the interest on considerably over \$100 an acre, but it is a matter of sentiment.

Mr. GLENN. What would it be worth if the lake were not there at all?

Mr. BARNES. I am speaking of the value of the land. I place that value on it as a future value for agricultural purposes; as soon as

it is cleared off and subdued it can be made to produce, properly farmed, an interest value of considerably over \$100 an acre.

Mr. GLENN. Supposing the lake were not there, what would it be worth?

Mr. BARNES. I made the statement that it was worth to me one to two thousand dollars more to be near the lake, and to another man it might be worth less.

Mr. GLENN. You think the lake adds to the value of the land there?

Mr. BARNES. It does to me; yes.

Mr. POWELL. Do you know anything about real estate values generally throughout the northern portion of Minnesota?

Mr. BARNES. I do not consider that values are established.

Mr. POWELL. Maybe not there, because it requires some buying and selling to establish a market value, but, outside of that?

Mr. BARNES. Take in the districts where they have commenced to open it up—this country is on the eve of being opened up—where it is opened up, land values run up as high as \$125 an acre.

Mr. TAWNEY. What part of Minnesota does it bring that price?

Mr. BARNES. Around the Falls, southwest of this.

Mr. TAWNEY. Where?

Mr. BARNES. The land southwest of this is worth \$125 an acre. I could not place a general value on this.

Mr. TAWNEY. Not on this, but anywhere?

Mr. BARNES. Land will sell in one locality for a certain price and in another locality another price, and where it is selling the cheapest it may be the best land and most productive. I consider land worth just what it will produce interest on; there is no market price ever made. Land in one place will sell for \$300 to \$400 an acre, which is worth more than land in another place, which is held at \$500.

Mr. TAWNEY. Is that fruit land?

Mr. BARNES. I do not know.

Mr. STEENERSON. Reference has been made to the fact of this land being in the vicinity of the lake, and Mr. Towney suggests that it was fruit land that was so valuable near Lake Michigan—

Mr. TAWNEY. He said that land cleared was selling from \$300 to \$400 an acre, and I asked him if it was not fruit land.

Mr. STEENERSON. Are you claiming that the nearness of this land to the Lake of the Woods would make it suitable for fruit trees?

Mr. BARNES. I do not know.

Mr. STEENERSON. Would it keep the frost away later in the fall?

Mr. BARNES. I would consider being close to the lake it would keep the frost away and make it more valuable for fruit trees.

Mr. STEENERSON. And that is the reason they have bought land near Lake Michigan, because it keeps the frost away and the fruit matures?

Mr. BARNES. Yes. Mr. Tawney misunderstood my statement. I was making a comparison of clearing, and I stated that my previous experience of clearing had been in the hardwood lands of Michigan and Illinois, or intended to say it, where it took a great while to get the roots out of the ground, and that land was selling at very high

prices compared with this land and was no better land in the line of productiveness.

Mr. ANDERSON. There is no market value for lands in this vicinity?

Mr. BARNES. No; I do not consider market values have been established.

Mr. ANDERSON. Is there much of this very land that you filed on and had to pay a dollar and a quarter an acre for open to file on?

Mr. BARNES. No; there is very little of it.

Mr. ANDERSON. Is there any of it in your neighborhood?

Mr. BARNES. There might be a little of it, but it is very scarce.

Mr. ANDERSON. Do you say there is timber growing on your land?

Mr. BARNES. It is what is considered by the Government brush land.

Mr. ANDERSON. But the timber is growing?

Mr. BARNES. Well they tell me it has not grown any for the last five or six years.

Mr. ANDERSON. Is it dead or live timber?

Mr. BARNES. It is mostly live timber, some of it, and on a portion of mine the tamarac is dying.

Mr. ANDERSON. How long did you know this land before you filed on it?

Mr. BARNES. Not a great while. I did not know of this special piece for a few days.

Mr. ANDERSON. When did you know the conditions in this locality?

Mr. BARNES. Only a short time.

Mr. ANDERSON. How long were you here before you filed on this land?

Mr. BARNES. Probably a couple of weeks.

Mr. ANDERSON. How did you find it?

Mr. BARNES. I stayed at the land office in Crookston when I came up, and took a look at the records, and I found one or two other pieces that were open in this township at that time which I think have since been taken, and I found this open.

Mr. ANDERSON. And your object in filing on this was to make a home of it?

Mr. BARNES. Yes.

Mr. ANDERSON. You had no idea to take it up as a speculation?

Mr. BARNES. No.

Mr. WYVELL. Were you on your land in the latter part of June or early part of July of this year?

Mr. BARNES. Yes.

Mr. WYVELL. About how many acres of your land was actually under water at that time?

Mr. BARNES. I can not answer that absolutely. By referring to the map you can see the 1,062 stage of the water, and it was right up around there, and it was actually submerged, so that you could see the water on top.

Mr. WYVELL. And that, in your judgment, would show the amount of land actually submerged?

Mr. BARNES. Yes; that would show it; and incidentally through this country the moss grows.

Mr. WYVELL. How much more land would be injuriously affected by the water?

Mr. BARNES. Every particle of my land had water on it at that time, and so much water that it could not be worked agriculturally.

Mr. ROCKWOOD. You say all through this country the moss grows?

Mr. BARNES. Through that section where I am.

Mr. ROCKWOOD. On the same kind of land?

Mr. BARNES. Yes. When the timber is cleared out that moss grows, and they have a very fine soil on it.

TESTIMONY OF ALONZO WHEELER.

(Alonzo Wheeler, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. WHEELER. I live at the mouth of the Rainy River; on the Minnesota side.

Mr. STEENERSON. Have you a farm there?

Mr. WHEELER. Yes.

Mr. STEENERSON. Give a description of it?

Mr. WHEELER. I can not do it. I can not remember the description. I can point to it.

Mr. STEENERSON. How much land—how many acres?

Mr. WHEELER. I have got 165, I think; it is 165 and some odd; I know it is over 160.

Mr. STEENERSON. Do you know what section it is in?

Mr. WHEELER. Twenty-five, I think, but I would not be positive.

Mr. MARSCHALK. It is immediately east of 24.

Mr. STEENERSON. What township is that?

Mr. WHEELER. One hundred and fourteen.

Mr. MARSCHALK. It is on the entrance of Rainy River, at the beginning of Four-Mile Bay.

Mr. POWELL. What plate is that?

Mr. GLENN. No. 15.

Mr. STEENERSON. There is a point of your land sticking out toward the east, into the Rainy River?

Mr. WHEELER. Yes.

Mr. STEENERSON. Has that point got a name?

Mr. WHEELER. Yes.

Mr. STEENERSON. What is the name of it?

Mr. WHEELER. Wheelers Point.

Mr. STEENERSON. You are one of the early settlers there?

Mr. WHEELER. I am one of the first.

Mr. STEENERSON. When did you settle there?

Mr. WHEELER. I settled there in 1885.

Mr. STEENERSON. Before the land was open for settlement?

Mr. WHEELER. I think somewhere in the neighborhood of 16 years before.

Mr. STEENERSON. It was simply an Indian reservation then?

Mr. WHEELER. Yes.

Mr. STEENERSON. And you have lived there ever since?

Mr. WHEELER. Yes.

Mr. STEENERSON. How was the lake when you first came, with reference to levels?

Mr. WHEELER. Well, it was a long ways different to what it is to-day.

Mr. STEENERSON. How many feet lower?

Mr. WHEELER. It would be in the neighborhood of 6 feet, very near.

Mr. STEENERSON. Six feet lower?

Mr. WHEELER. Yes.

Mr. STEENERSON. Do you know anything about the dams that they claim to have raised this lake?

Mr. WHEELER. Yes; I do know all about them.

Mr. STEENERSON. Have you been up there and seen them?

Mr. WHEELER. Yes.

Mr. STEENERSON. When were they built?

Mr. WHEELER. I can not give you exactly the dates.

Mr. STEENERSON. It was after you settled on this?

Mr. WHEELER. Yes.

Mr. MIGNAULT. We have all that information of the date of the building of the dams.

Mr. POWELL. Mr. Steenerson, perhaps, wants to call his attention to facts.

Mr. STEENERSON. You observed the dams when they were built?

Mr. WHEELER. Yes.

Mr. STEENERSON. That was some years after you had settled here?

Mr. WHEELER. Yes.

Mr. STEENERSON. And you might state whether or not you observed that the lake level was raised.

Mr. WHEELER. Why, certainly; without a doubt; I know it. When we came here we had to study the lake. I was one of the first captains on the lake, and when we came here we had to take our landmarks; we had no buoys or lighthouses and we had to study the levels of the lake in order to get through, and we had to take particular notice of all reefs and anything like that.

Mr. STEENERSON. This land that you have has been improved, has it not?

Mr. WHEELER. Yes.

Mr. STEENERSON. What improvements have you made?

Mr. WHEELER. Well, I have cleared up some.

Mr. STEENERSON. How many acres?

Mr. WHEELER. About 35 acres.

Mr. STEENERSON. What did it cost to clear up per acre?

Mr. WHEELER. My land did not cost me very much; probably in the neighborhood of \$18 to \$20 an acre.

Mr. STEENERSON. You did the work yourself?

Mr. WHEELER. The principal part of it; I hired some of it.

Mr. STEENERSON. If you hired it all——

Mr. WHEELER. It would not cost me more than \$15; I can get land cleared for \$10 an acre.

Mr. STEENERSON. It depends on the growth of the timber.

Mr. WHEELER. Yes.

Mr. STEENERSON. This was mostly brush?

Mr. WHEELER. Yes.

Mr. STEENERSON. How much have you actually cultivated of this land?

Mr. WHEELER. Well, I had at different times, I guess, in the neighborhood of 30 acres; some of it has grown up with brush since.

Mr. STEENERSON. Has there been any hay meadow on your land?

Mr. WHEELER. Yes.

Mr. STEENERSON. How much hay meadow was there when you first located on it?

Mr. WHEELER. When I located on it there was in the neighborhood of between 30 and 40 acres.

Mr. STEENERSON. That is in addition to the land that you have cleared?

Mr. WHEELER. Yes.

Mr. STEENERSON. What kind of hay did it produce?

Mr. WHEELER. Pea vine, blue joint—

Mr. STEENERSON. What is the character of the buildings you put on?

Mr. WHEELER. Well, I have one building there; one part is 18 by 24, 16-foot studding, and the other 24 by 20, 16-foot studding.

Mr. STEENERSON. Shingled roof?

Mr. WHEELER. Yes.

Mr. STEENERSON. That is where you live?

Mr. WHEELER. Yes.

Mr. STEENERSON. Your residence?

Mr. WHEELER. The first building I put up there was a log residence 22 by 32—16-foot walls.

Mr. STEENERSON. Do you keep cattle and horses?

Mr. WHEELER. Yes.

Mr. STEENERSON. Have you stables?

Mr. WHEELER. Yes.

Mr. STEENERSON. What kind of stables?

Mr. WHEELER. Log stables.

Mr. STEENERSON. What is the value or cost of these?

Mr. WHEELER. Well, my house cost me something over \$1,200.

Mr. STEENERSON. And the other buildings?

Mr. WHEELER. That is the one I am living in now, and the other one I guess it cost me pretty near equally as much—the one I first built.

Mr. STEENERSON. Your other place?

Mr. WHEELER. Well, I have had a change of buildings. I have had log buildings that rotted away, and I had to tear them down.

Mr. STEENERSON. What would you value your buildings at now?

Mr. WHEELER. I should say in the neighborhood of five or six hundred dollars.

Mr. STEENERSON. Outside of your house?

Mr. WHEELER. Yes; oh, they would be worth more than that. I have another building there, say \$900.

Mr. STEENERSON. What would you say was the value of your residence and all the other buildings?

Mr. WHEELER. About \$2,000.

Mr. STEENERSON. How has this rise in the lake level affected your land?

Mr. WHEELER. It has washed away, as you see on the map here; in the one place it has washed away close on to 300 feet.

Mr. STEENERSON. About what would be the area washed away?

Mr. WHEELER. I should think around in the bay side—that is next to the lake there—it has washed away and eat away probably in the neighborhood of 30 feet.

Mr. STEENERSON. I mean the total area in acres.

Mr. WHEELER. Oh, I could not say exactly. I have not figured it out.

Mr. STEENERSON. What distance in length would it be?

Mr. WHEELER. I should think it would be a little over 40 rods in one way and 40 the other way.

Mr. GARDINER. You mean 40 rods in length on the shore?

Mr. WHEELER. Yes.

Mr. POWELL. That is the wearing away in 30 years?

Mr. WHEELER. Yes; since I have been there. My land ascends from the level bank gradually back.

Mr. STEENERSON. How many acres have been flooded?

Mr. WHEELER. This year, I think, under water there would be in the neighborhood of 60 acres, very near, pretty close.

Mr. STEENERSON. What would your farm be worth if the water did not come up and flood it?

Mr. WHEELER. It would be worth just equally as much as anybody else's in the country, and a little bit more.

Mr. STEENERSON. Why would it be worth more?

Mr. WHEELER. Because that point is more adapted for summer residences and the like of that, and picnic grounds, and bathing grounds, and good fishing ground around it.

Mr. STEENERSON. This flooding has made the land that is flooded, affected by water and submerged, useless?

Mr. WHEELER. Certainly, no doubt.

Mr. STEENERSON. Has the fact that there is part of the land flooded and submerged affected the balance of your farm injuriously?

Mr. WHEELER. Why, certainly; without a doubt.

Mr. STEENERSON. What would you say the damage would be, first, for the land flooded, and next the injurious effect on the land not flooded? State separately, if you can.

Mr. WHEELER. It is a pretty hard matter for me to figure it out exactly.

Mr. STEENERSON. What do you estimate the value per acre of that 30 acres that you say is flooded?

Mr. WHEELER. It is worth just as much as any of the rest of my farm.

Mr. STEENERSON. You have put crops in it and know?

Mr. WHEELER. What I have cropped and what I have had to quit on account of the high water—any acres that I did crop there it was actually worth, I should say, between \$75 and \$100 an acre.

Mr. STEENERSON. This 30 acres that was flooded is an irregular piece cut out of your farm?

Mr. WHEELER. Yes.

Mr. STEENERSON. And you may state whether or not the fact that it was taken out and flooded and submerged there would affect the value of the rest of the land.

Mr. WHEELER. Why, certainly.

Mr. STEENERSON. How many dollars?

Mr. WHEELER. I know if I was going in there to buy it I would not give the man over half the amount of the value of the rest of the land.

Mr. STEENERSON. And the rest of the land is worth \$100 an acre?

Mr. WHEELER. I would not want to take any less.

Mr. STEENERSON. And you think it is damaged to the extent of \$50 an acre by the fact that it is submerged?

Mr. WHEELER. Yes.

Mr. STEENERSON. I will examine this witness as to navigation later.

Mr. TAWNEY. How many acres are under cultivation?

Mr. WHEELER. About 30 acres I have had under cultivation different times.

Mr. TAWNEY. About how many acres this year?

Mr. WHEELER. Well, in the spring I had about 12.

Mr. TAWNEY. What is the nature of the crops?

Mr. WHEELER. One was timothy and clover, and the other a large potato field, and the high water raised so high this fall, and the rain, that it destroyed my potatoes altogether.

Mr. TAWNEY. Had you more than the usual rainfall this year?

Mr. WHEELER. We had considerable rainfall. The drainage was enough, providing the flooding was not so high that it would not bother our crops in the least.

Mr. TAWNEY. How many horses have you?

Mr. WHEELER. I have three.

Mr. TAWNEY. And how many cattle?

Mr. WHEELER. I have 5 head of cattle, but I have been up as high as 30, up and down.

Mr. TAWNEY. You said that this land submerged was worth \$100 an acre, and that it is valueless now. If you were to sell it, would you give it away, or would you expect to receive some compensation from the land submerged?

Mr. WHEELER. That would depend on whether this dam was going to remain in there.

Mr. TAWNEY. What price would you sell it for under the circumstances if it was to be permanently submerged?

Mr. WHEELER. If I would get a man that was foolish enough to buy it and give me a good price for it I would sell it to him.

Mr. TAWNEY. But what would it be worth?

Mr. WHEELER. That is another question.

Mr. TAWNEY. If it was going to be permanently submerged?

Mr. WHEELER. It would be no good to me at all.

Mr. TAWNEY. Would you give it away?

Mr. WHEELER. No; I would not give it away.

Mr. TAWNEY. You do not know what price you would take for it?

Mr. WHEELER. No; not until I got the party I was going to sell it to.

Mr. MIGNAULT. Could you point out on the map exactly where your property is situated?

Mr. WHEELER. I think I could if I saw a map that represented it.
(Map shown witness and examined.)

Mr. MEYER. Mr. Wheeler's cultivated land lies above the limits of our surveys, and, therefore, is not shown on the map.

Mr. ROCKWOOD. Mr. Wheeler, you said you were on this land from about 1885?

Mr. WHEELER. Yes, sir.

Mr. ROCKWOOD. When did you make your entry?

Mr. WHEELER. I can not give you the exact date of that.

Mr. MARSCHALK. That was in November. He went to Crookston to file.

Mr. WHEELER. No; I went to Roseau in December.

Mr. ROCKWOOD. Can you tell the year?

Mr. WHEELER. No; not exactly. I can not remember the date.

Mr. ROCKWOOD. It was as late as 1898, was it not?

Mr. WHEELER. I would not answer to that. The land was opened in the fall, and I did not go because I was away at the time. I went just before Christmas, that same fall.

Mr. ROCKWOOD. You went in December, after it was opened?

Mr. WHEELER. Yes, sir.

Mr. ROCKWOOD. You do not claim any rights by virtue of your occupation before you made your entry, do you? The land was not opened to entry at all?

Mr. WHEELER. Certainly not. I was a squatter there.

Mr. TAWNEY. He does not claim any damages for any time prior. He is only claiming damages for injury since the dam was constructed, which was in 1898. There is not anything involved here going back to the time he was a squatter there.

Mr. ROCKWOOD. I just wanted it made clear that he did not make such claim.

TESTIMONY OF PETER BERKMAN, OF WARROAD, MINN.

(PETER BERKMAN, having been first duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live, Mr. Berkman?

Mr. BERKMAN. I live at Warroad at the present time.

Mr. STEENERSON. Have you got a farm?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Where is your farm?

Mr. BERKMAN. I have a farm in township 162, range 36; the north-east quarter of section 12; and I have a half adjacent to that farm.

Mr. STEENERSON. I have my notes made at the time I asked you what you knew about this case, and I see you told me you lived 6 miles south of Warroad.

Mr. BERKMAN. Yes; that is right. I have the farm rented.

Mr. STEENERSON. I am not particular about that. I want to locate your farm. It is southeast of Warroad 6 miles?

Mr. BERKMAN. Yes.

Mr. STEENERSON. How many acres have you altogether?

Mr. BERKMAN. I have a half section there.

Mr. TAWNEY. Can you locate it with reference to any particular point on the lake shore, so that it will show on the map?

Mr. BERKMAN. It adjoins Mr. Landby's on two sides. It does not show on the Warroad map. It is the north half of the southwest quarter of section 6, township 162, range 135, and the northeast of the northwest quarter, and the northwest of the northeast quarter of section 7.

Mr. STEENERSON. How many acres are there in your farm?

Mr. BERKMAN. Half a section.

Mr. STEENERSON. Three hundred and twenty acres?

Mr. BERKMAN. Not quite.

Mr. STEENERSON. Well, how many acres are there?

Mr. BERKMAN. A little over 300. There are little fractions in the northeast.

Mr. STEENERSON. How much less than 320 acres is it?

Mr. BERKMAN. Perhaps 5 or 10 acres.

Mr. STEENERSON. It is 310 or 315 acres, then?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Is that all in one body?

Mr. BERKMAN. It is joined together; it is not in one body.

Mr. STEENERSON. It would be in one body if it were joined together. Has it corners?

Mr. BERKMAN. Corners; yes, sir.

Mr. STEENERSON. Where is your home farm?

Mr. BERKMAN. The home farm is in township 162, range 36.

Mr. STEENERSON. That is where your residence is?

Mr. BERKMAN. That is where the residence and buildings are.

Mr. STEENERSON. You lived on this farm for a long time, did you not?

Mr. BERKMAN. I lived there for about five years.

Mr. STEENERSON. Did you take it as a homestead?

Mr. BERKMAN. No.

Mr. STEENERSON. You bought it?

Mr. BERKMAN. I bought it.

Mr. STEENERSON. How long since you first got this land?

Mr. BERKMAN. I think I got that land about 10 years ago.

Mr. STEENERSON. That is, the 160 acres where your home is? That is your residence?

Mr. BERKMAN. Yes.

Mr. STEENERSON. You may state what buildings there are on that land.

Mr. BERKMAN. There is a house, two barns, a granery, a flowing well, and a well house.

Mr. STEENERSON. What is the general description of the dwelling—one story or two stories?

Mr. BERKMAN. It is a story and a half.

Mr. STEENERSON. What is the value of the improvements—the barns and well and well house?

Mr. BERKMAN. About \$3,000—\$2,500, to be safe.

Mr. STEENERSON. Are there any structures on the other land?

Mr. BERKMAN. There is a log building on the other land.

Mr. STEENERSON. Are there any other improvements—any fences?

Mr. BERKMAN. There are no fences on the other land.

Mr. STEENERSON. There is a fence on the first land you mentioned?

Mr. BERKMAN. A wire fence.

Mr. STEENERSON. On this 160 acres where your dwelling is, how many acres are under cultivation?

Mr. BERKMAN. There are 60 acres under plow, and the rest of it is cleared.

Mr. STEENERSON. Has some of it been cleared and used for hay?

Mr. BERKMAN. Yes; there are about 15 acres of meadow cleared.

Mr. STEENERSON. What do you raise on that?

Mr. BERKMAN. All kinds of crops.

Mr. STEENERSON. Is it wild grass or tame grass?

Mr. BERKMAN. There is tame grass and wild grass.

Mr. STEENERSON. Is it customary up here for the farmers to clear the land of the brush and timber and then sow tame grass, clover, and timothy on the ground?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Have you done that?

Mr. BERKMAN. Yes.

Mr. POWELL. Then you harrow it in with a disk harrow, do you?

Mr. BERKMAN. I have sowed on what is called muskeg land. I did sow clover and hay there without cultivation and got it to grow. That is a peculiar thing; I never saw it done before, but it did work that time.

Mr. STEENERSON. What was the character of the clearings?

Mr. BERKMAN. Some of it was heavy timber and some was light brush and willows.

Mr. STEENERSON. How many acres altogether have been cleared or cultivated?

Mr. BERKMAN. On all of it, do you mean?

Mr. STEENERSON. Yes.

Mr. BERKMAN. One hundred and twenty-five or one hundred and forty acres, perhaps, of that grass can be cut.

Mr. STEENERSON. One hundred and twenty-five acres on both pieces?

Mr. BERKMAN. Yes; more than that, I believe. That is just an estimate.

Mr. STEENERSON. What kind of crops have you produced on it where you have cultivated the land?

Mr. BERKMAN. Barley and oats; also potatoes and vegetables of all kinds.

Mr. STEENERSON. How is the soil with regard to fertility?

Mr. BERKMAN. The soil is the very best, according to my judgment.

Mr. STEENERSON. Is it black soil?

Mr. BERKMAN. Black soil with clay bottom.

Mr. STEENERSON. How many tons of clover have you raised on this land?

Mr. BERKMAN. It is not altogether clover; it is clover and timothy; in my judgment, about 2 tons to the acre.

Mr. STEENERSON. What do you consider the value of this land?

Mr. BERKMAN. What it really paid me in return, but I could not prove that I have got returns for money expended.

Mr. STEENERSON. You can explain that when you are cross-examined.

Mr. BERKMAN. I estimate the value at \$100 an acre, because I think it is just as good as my neighbor's land.

Mr. STEENERSON. Has it produced valuable crops?

Mr. BERKMAN. Yes; it has.

Mr. STEENERSON. How far are you from the market for those crops?

Mr. BERKMAN. I am about three-quarters of a mile from Swift.

Mr. STEENERSON. What crops have you marketed there?

Mr. BERKMAN. In relation to what I have sold in the way of barley and oats, etc., I have sold it right on the place; they have come after it.

Mr. STEENERSON. There has been a good deal of lumbering going on, getting out poles and ties and such things, and they needed barley and oats and hay, and you sold it right on the place?

Mr. BERKMAN. Yes; right on the place.

Mr. STEENERSON. Have you sold anything in Warroad, any farm products?

Mr. BERKMAN. Nothing except potatoes, etc.

Mr. STEENERSON. You have sold potatoes, then?

Mr. BERKMAN. Yes; and shipped them from Swift.

Mr. STEENERSON. In carload lots?

Mr. BERKMAN. Yes.

Mr. STEENERSON. How much an acre has that produced?

Mr. BERKMAN. I can not give you any figures on that.

Mr. STEENERSON. Do you know how many bushels you raised on an acre?

Mr. BERKMAN. One year I raised an immense crop.

Mr. STEENERSON. What do you call an immense crop?

Mr. BERKMAN. I guess it was 200 bushels to the acre.

Mr. STEENERSON. What did you get a bushel for them?

Mr. BERKMAN. About 80 cents a bushel, I think it was.

Mr. STEENERSON. Do you keep stock?

Mr. BERKMAN. Yes.

Mr. STEENERSON. How many head of cattle?

Mr. BERKMAN. I had about 12 head of cattle.

Mr. STEENERSON. Have you been doing any dairying on that farm; making butter and cheese and selling such products in the market?

Mr. BERKMAN. Sure.

Mr. STEENERSON. How many cows did you usually keep there?

Mr. BERKMAN. I usually had about six cows, I think.

Mr. STEENERSON. But you did produce some butter for market?

Mr. BERKMAN. Yes.

Mr. STEENERSON. How many horses did you have?

Mr. BERKMAN. I had three horses.

Mr. STEENERSON. You are not farming the land yourself now?

Mr. BERKMAN. No.

Mr. STEENERSON. How did you rent it out, on shares?

Mr. BERKMAN. On shares.

Mr. STEENERSON. What kind of crops do you get in return?

Mr. BERKMAN. I rent it for one-third and the renter furnishes the seed and everything, and I get a third of the crop, whether it is hay or potatoes or anything else.

Mr. STEENERSON. How was the lake level when you first went there?

Mr. BERKMAN. I do not remember just exactly. It was about seven years ago since I went there. The lake was going down.

Mr. STEENERSON. Did the lake affect your land by overflow when you first got it?

Mr. BERKMAN. No; it did not affect my land when I first got it, and it does not affect the one quarter in section 12 now, but it affects the other quarter, and I bought that since. I bought that about six

years ago. The lake was going down, and on the prospects of the lake going down I bought that corner of my place.

Mr. STEENERSON. That portion is not affected by the lake?

Mr. BERKMAN. That is not affected by the lake, but this in township 162, range 35, is affected by the lake.

Mr. MIGNAULT. When you say that a part is not affected what part do you have reference to?

Mr. BERKMAN. I refer to the part in township 162, range 36.

Mr. TAWNEY. How many acres?

Mr. BERKMAN. One hundred and sixty acres. That is the one south of Mr. Landby's.

Mr. TAWNEY. The one that you say is affected has what description?

Mr. BERKMAN. The description is township 162, range 35; the north half of the southwest corner of section 6.

Mr. STEENERSON. How much of that is affected?

Mr. BERKMAN. That is all affected; when you come to speak in a general sense it is all affected by the high water.

Mr. STEENERSON. It is all affected by the high water that prevailed here last spring?

Mr. BERKMAN. Yes.

Mr. STEENERSON. How much of it was actually submerged and under water?

Mr. BERKMAN. None of it.

Mr. STEENERSON. Then how was it affected?

Mr. BERKMAN. It was affected by being wet or water-logged, as they call it now.

Mr. STEENERSON. It seeps in from the lake?

Mr. BERKMAN. It backs up from the lake; yes.

Mr. STEENERSON. How was it when your cows or horses walked on it? Was it soft underground?

Mr. BERKMAN. Certainly.

Mr. STEENERSON. It was soft all over?

Mr. BERKMAN. Not all over all the land, but a good deal of it.

Mr. STEENERSON. I thought you said it affected it all over.

Mr. BERKMAN. Indirectly it does.

Mr. STEENERSON. How much of it was so water-logged as to be soft?

Mr. BERKMAN. Fifty acres, anyway.

Mr. STEENERSON. What did you name as the value of that 50 acres if the lake was lower and did not affect it?

Mr. BERKMAN. It was just as good as any other part of it.

Mr. STEENERSON. \$100 an acre?

Mr. BERKMAN. Yes.

Mr. STEENERSON. If it is submerged or wet like that, can it be used for farming?

Mr. BERKMAN. No.

Mr. STEENERSON. So its value is destroyed?

Mr. BERKMAN. The value is destroyed because you can not use it for hay.

Mr. STEENERSON. With regard to the balance which you say was not soft by reason of this high water, does the taking of 50 acres unfit

for use out of that quarter in an irregular way, as you have shown it, affect the remainder?

Mr. BERKMAN. It certainly does.

Mr. STEENERSON. How much would the fact that it was cut out in an irregular way and the further fact that there was stagnant water near there affect the balance?

Mr. BERKMAN. It affected it this way: If it had not been for it being so wet there I would have had it under cultivation.

Mr. STEENERSON. How much less in dollars and cents do you think it would be worth if it were not for that 50 acres being submerged?

Mr. BERKMAN. It is hard to say; about half, anyway.

Mr. STEENERSON. Half of its value?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Are you acquainted with the other settlers along the lake shore there?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Do you know of any others whose lands have been affected by the water?

Mr. BERKMAN. Oh, yes.

Mr. STEENERSON. How many do you know that are not represented here?

Mr. BERKMAN. Well, I know three of them, anyway, that are not represented here.

Mr. TAWNEY. Can you give us their names?

Mr. BERKMAN. There is Mr. Matson, and I have a daughter who has a claim outside of where I have one, and that is practically submerged.

Mr. STEENERSON. That is all under water?

Mr. BERKMAN. It is under water in a way.

Mr. STEENERSON. Well, it is not entirely under water, but when you go to walk on it you find water.

Mr. BERKMAN. I encouraged her to file on the land, because in 1911 we all expected we were going to have a nice shore on the lake and looked for it to be a very desirable place in the future.

Mr. STEENERSON. That is the quarter you showed me some years ago?

Mr. BERKMAN. Yes; you walked out with me on the shore there.

Mr. TAWNEY. What is the name of the third party?

Mr. BERKMAN. Mr. Magnus Johnson.

Mr. TAWNEY. Do they all get their mail here at Warroad?

Mr. BERKMAN. Mr. Magnus Johnson gets his mail at Stillwater, Minn.

Mr. STEENERSON. Have they been driven out by the water or are they still there?

Mr. BERKMAN. They have been driven out.

Mr. STEENERSON. Your daughter had to move away from her land on account of the water?

Mr. BERKMAN. Sure.

Mr. STEENERSON. Do you know the description of her homestead?

Mr. BERKMAN. No; but that is in section 6. I guess I could show it on the map.

Mr. STEENERSON. Perhaps your son can give us that information.

Mr. BERKMAN. The south half of the northwest of section 6, the northeast of the southwest of section 6, and the northwest of the southwest of section 6.

Mr. STEENERSON. Do you know anything about whether or not there have been any drainage ditches constructed in your neighborhood?

Mr. BERKMAN. Yes; there is one right here on the line of the southwest quarter of section 6, running north and south. The ditches in the quarter line of the section.

Mr. STEENERSON. How many miles south does that extend?

Mr. BERKMAN. About 3 miles south.

Mr. STEENERSON. Is it a judicial or a county ditch?

Mr. BERKMAN. It is a county ditch.

Mr. MIGNAULT. When was it built?

Mr. BERKMAN. It was built this last summer.

Mr. STEENERSON. Does that ditch touch your land?

Mr. BERKMAN. Yes.

Mr. STEENERSON. On what side of it?

Mr. BERKMAN. Part of it is on both sides of it.

Mr. STEENERSON. It runs through your land, does it?

Mr. BERKMAN. It runs through my land.

Mr. STEENERSON. Through what part of it?

Mr. BERKMAN. The east part of it.

Mr. STEENERSON. For how many rods does it run through your land?

Mr. BERKMAN. For half a mile.

Mr. STEENERSON. Do you know whether or not you have been assessed for the construction of that ditch?

Mr. BERKMAN. Yes; I have been assessed. I have three quarters there, and I have been assessed for all three quarters.

Mr. STEENERSON. How many dollars is your assessment?

Mr. BERKMAN. \$640.

Mr. STEENERSON. That is payable in installments in the future?

Mr. BERKMAN. Well, it is payable in installments or you can pay all at once.

Mr. STEENERSON. It is a lien on the land?

Mr. BERKMAN. It is a lien on the land.

Mr. POWELL. What particular bearing has this on the question of values, Mr. Steenerson?

Mr. STEENERSON. It has a bearing.

Mr. GLENN. They have to dig the ditch there to keep the water from seeping through.

Mr. STEENERSON. It shows the improvement on the land. A ditch is generally an improvement. As it turns out to keep a high level it is more a detriment than anything else.

Mr. POWELL. I infer that there is a general system of drainage throughout this country.

Mr. STEENERSON. It is a tax against the land.

Mr. POWELL. But it would not affect the general question, would it?

Mr. STEENERSON. Yes; it would.

Mr. POWELL. If we get the average value of lands per acre, what difference does it make whether that valuation is reached by means of ditching or by cutting down trees or how it is reached as long as it is the marketable valuation?

Mr. STEENERSON. There is another reason. I was about to follow it up with evidence as to how this ditch works when the water is high.

Mr. POWELL. I do not think the game is worth the candle.

Mr. STEENERSON. If we should assume that the theory of the settlers would be that you would measure the number of acres submerged or overflowed by water and get some expert to give an opinion as to the values, that would be the direct method, but the indirect is very much greater than the direct.

Mr. POWELL. Personally I would go with you to this extent, that as a fundamental principle of that we should follow this on the lines of condemnation, or, as we say in the British Empire, expropriation. The basic principle in that is the value to the man whose land is taken away; that is not an exceptional value, but a real general value to him which must be the standard.

Mr. STEENERSON. That word "taken" in the meaning of expropriation is taking whether you take it or not, if you render it useless.

Mr. POWELL. Both in your law and ours there is a quid pro quo for the forcible taking. When you have those things, what difference can it possibly make whether it is cut up with ditches or there are no ditches, or whether or not there are cedar trees growing on it, as long as we got the market value as one of the elements that enter into it?

Mr. STEENERSON. That is assuming that this commission will decide the whole question upon expert opinion evidence. There is no market value. You have to bring in the actual facts from which you conclude what the value of the land is.

Mr. POWELL. This system of examination is laying emphasis on a particular feature of a particular law.

Mr. ANDERSON. I would not like to agree with the principles laid down by Mr. Powell as to expropriation values.

Mr. POWELL. Your contention is that the principle of expropriation does not apply to this particular case?

Mr. ANDERSON. That is one thing.

Mr. C. E. BERKMAN. In answer to the gentleman's question in relation to what the tax valuation or the lien against these lands has to do with this proposition of condemnation, I might say that in the case where the county puts in the ditch system it sells its bonds for the construction of these ditches and takes a first lien upon these lands. If these lands are submerged so that they are valueless, then they will not continue to pay taxes on them, and the county will lose that proportionate cost.

Mr. POWELL. That is something that is not within our scope.

Mr. STEENERSON. I almost regret that I ever opened this ditch, but I will try and finish it. Mr. Berkman, the outlet of this ditch, I believe, is into the Lake of the Woods?

Mr. BERKMAN. Certainly.

Mr. STEENERSON. North of the north line of your land?

Mr. BERKMAN. Yes.

Mr. STEENERSON. You have examined these splendid maps that the surveyors have produced here?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Have you observed about how many feet of fall there is in the grounds; that is, how far the first 6 feet fall?

Mr. BERKMAN. From the corner of my land out to the lake is 1 mile exactly. It is a fall of 6 feet to the mile.

Mr. STEENERSON. There is a fall of 6 feet to that last mile of the ditch?

Mr. BERKMAN. And the water backs up there for that mile and within 20 rods of the corner of my land. Then it fills up the ditch there, and in a year, if that condition exists, the ditch is going to be full there with sediment, and it will back up and flood more land.

Mr. TAWNEY. When was the ditch built?

Mr. BERKMAN. This summer.

Mr. TAWNEY. The fault was in the planning of the ditch rather than the high water of the lake at that time?

Mr. BERKMAN. Not the fault of the planning of the ditch, because there were other petitioners away back that wanted the ditch just as much as we did, and we all wanted the ditch out to the lake. It is the fault of the high water backing up into the ditch.

Mr. STEENERSON. The extent of the ditch inland is how many miles?

Mr. BERKMAN. Four miles south and 3 miles east.

Mr. STEENERSON. The farthest point away from the lake where the ditch begins is how many miles?

Mr. BERKMAN. About 6 miles, but it goes——

Mr. STEENERSON. It goes parallel.

Mr. BERKMAN. The ditch is 6 miles.

Mr. STEENERSON. Six miles altogether?

Mr. BERKMAN. Six miles altogether.

Mr. STEENERSON. But about how far back from the lake is it to where it begins?

Mr. BERKMAN. Four miles.

Mr. STEENERSON. That is 3 miles beyond this first mile which has a 6-foot fall. You do not know what the fall is back of that?

Mr. BERKMAN. No. I would like to be corrected, though. The ditch is 3 miles south in place of 4 miles.

Mr. STEENERSON. Three miles south and then it runs how many miles?

Mr. BERKMAN. Then it runs 3 miles east.

Mr. STEENERSON. It is 6 miles long altogether.

Mr. BERKMAN. Yes.

Mr. STEENERSON. Then the farthest point away from the lake is only about 3 miles, as I understand you?

Mr. BERKMAN. Yes; that is right.

Mr. STEENERSON. You could not tell how many feet to the mile it slopes?

Mr. BERKMAN. I could not only for the 1 mile that I have stated.

Mr. STEENERSON. That is shown on the contour lines of the map. The character of the land as you have seen it there is rather flat, I suppose?

Mr. BERKMAN. Yes.

Mr. STEENERSON. And it has been troubled with surface water? That is the reason you built the ditch?

Mr. BERKMAN. That is the reason we built the ditch.

Mr. STEENERSON. How did this high water operate on the ditch?

Mr. BERKMAN. I was not there this summer, so I couldn't say.

Mr. STEENERSON. It backed the water up in the ditch?

Mr. BERKMAN. To this point where it backs up the sediment can not go out.

Mr. STEENERSON. Even without any sediment the backwater would raise the outlet of that ditch so much higher, according to Mr. Meyer's expert evidence given here?

Mr. BERKMAN. Surely.

Mr. STEENERSON. It would retard the current of the whole ditch?

Mr. BERKMAN. Surely; there would be no current.

Mr. TAWNEY. How long has your land been leased?

Mr. BERKMAN. Five years.

Mr. TAWNEY. You get one-third of the crop as your share?

Mr. BERKMAN. Yes.

Mr. TAWNEY. That is the compensation you get for the lease of the land?

Mr. BERKMAN. That is the compensation.

Mr. TAWNEY. What does that third yield you annually?

Mr. BERKMAN. I can not tell you that; I haven't kept any figures.

Mr. TAWNEY. Can you give us approximately what it has yielded you last year?

Mr. BERKMAN. Last year we had a hail storm so that the crop was not so very good.

Mr. TAWNEY. Take the best year that you have had since you leased it—how much did that one-third of the crop yield?

Mr. BERKMAN. I can not tell because I haven't paid attention. I have paid out more than I got in because I have improved the place.

Mr. TAWNEY. Have you any estimate at all of what the one-third of that crop was worth to you?

Mr. BERKMAN. No; I can not give those figures in evidence.

Mr. TAWNEY. That would be illuminating as to what your place was worth.

Mr. BERKMAN. But I can not do it.

Mr. TAWNEY. You kept no account of it?

Mr. BERKMAN. No account.

Mr. TAWNEY. So you do not know whether it paid you 1 per cent or 5 per cent on the valuation which you put on your land?

Mr. BERKMAN. No.

Mr. GLENN. How far is this land that you say is damaged from the lake?

Mr. BERKMAN. It lacks 80 rods of being a mile; that is the nearest point.

Mr. MEYER. Reference was made to my testimony with respect to the backing up of the water in the ditch. I did not know that I had given any such testimony, and I would like to be informed on the subject so that I may be permitted to take the stand later on.

Mr. STEENERSON. I did not refer to a ditch. I referred to the testimony of Mr. Meyer, which he will not deny that he gave.

Mr. TAWNEY. There was nothing with reference to a ditch, I believe.

Mr. STEENERSON. No; it was with reference to the river.

Mr. ROCKWOOD. Mr. Berkman, when did you buy the east farm, that home farm?

Mr. BERKMAN. About 10 years ago.

Mr. ROCKWOOD. What did you pay for it?

Mr. BERKMAN. I paid \$1,000.

Mr. ROCKWOOD. Are there any improvements there?

Mr. BERKMAN. No.

Mr. GLENN. How many acres are there in that piece?

Mr. BERKMAN. One hundred and sixty.

Mr. ROCKWOOD. What did you pay for the west ground?

Mr. BERKMAN. I do not remember. I think it was \$800.

Mr. ROCKWOOD. That was in what year?

Mr. BERKMAN. That was in 1909, I think.

Mr. ROCKWOOD. What is the best price at which you have known farm land selling in your neighborhood?

Mr. BERKMAN. That was stated by Mr. Landby yesterday. There has been no land sold in the immediate neighborhood.

Mr. ROCKWOOD. Say within three miles, then; other than those little two-acre pieces at Swift.

Mr. BERKMAN. There has been none sold in that neighborhood. Over here by Warroad I can give you some statements.

Mr. ROCKWOOD. This land at Warroad is right by the town, is it not?

Mr. BERKMAN. No; say Bird's place.

Mr. ROCKWOOD. That is close to the town of Warroad?

Mr. BERKMAN. No; this is about 2 miles up along the river.

Mr. ROCKWOOD. In your neighborhood you can not name any higher prices than those you have mentioned?

Mr. BERKMAN. No, sir.

Mr. ROCKWOOD. Where did you first get the idea of \$100 an acre? Was it simply because others claimed it?

Mr. BERKMAN. In a way, as far as that is concerned; yes.

Mr. ROCKWOOD. Do you know who first originated that idea?

Mr. BERKMAN. No; I do not know about the idea; but I have farmed a good many years myself, and as far as the productiveness of the soil is concerned, comparing this with other States where I have lived, I would estimate it higher than that.

Mr. ROCKWOOD. This is the only figure that anyone gives. I want to know how it is arrived at. You all arrive at the same figure, \$100 an acre. There is a good deal of concert of thought in that, is there not?

Mr. BERKMAN. I do not know that there is any concert of thought. I have been sitting here listening to this testimony, and when you come down to the actual productiveness of the soil, I would say that I have had land and sold land; I had a home in South Dakota once, and considering the productiveness of that soil there and the productiveness of the soil here, what it will give in 10 years time I consider this land cheap at \$100 an acre.

Mr. ROCKWOOD. If you ever get into court the court will not let you testify to values in South Dakota or in any other location. Then, you can not help us any further than you have to trace this idea of \$100 an acre, can you?

Mr. BERKMAN. No, sir.

Mr. ROCKWOOD. You do not know who the pacemaker was?

Mr. BERKMAN. No; I do not know.

Mr. GLENN. You said you paid in 1909 \$1,000 for the home farm, 160 acres, and \$800 for the east farm.

Mr. BERKMAN. Yes.

Mr. GLENN. Which is the one that is damaged?

Mr. BERKMAN. The east farm.

Mr. GLENN. You say that land is worth \$100 an acre?

Mr. BERKMAN. It is not now.

Mr. GLENN. Well, it was not worth \$100 an acre when you bought it; 10 years ago you got it for \$800, did you not?

Mr. BERKMAN. About six years ago I bought it for \$800.

Mr. GLENN. That is not \$6 an acre.

Mr. BERKMAN. That is true.

Mr. GLENN. You now say it is worth \$100 an acre?

Mr. BERKMAN. I do not say that it is worth a hundred dollars; but the productiveness under proper conditions would be that.

Mr. GLENN. Was it worth \$100 an acre when you bought it?

Mr. BERKMAN. I expected it would be worth that. I did not say that the land was worth \$100 an acre, but I said that the productive qualities are as good, provided we do not have this water condition; we can produce as much.

Mr. GLENN. It was as productive six years ago as it is to-day, or more?

Mr. BERKMAN. Yes.

Mr. GLENN. And you paid \$6 an acre for it then?

Mr. BERKMAN. Yes.

Mr. GLENN. Now you say it is worth \$100 an acre.

Mr. BERKMAN. The value of it, I said.

Mr. STEENERSON. You have improved that land, have you not, Mr. Berkman?

Mr. BERKMAN. Yes, sir; I should say so.

Mr. GLENN. Did you not say there is only a log house on it?

Mr. BERKMAN. There is; but it is cleared; 60 acres of that land is cleared.

Mr. STEENERSON. The value of this land that Gov. Glenn just spoke about includes the clearing of it and putting it under cultivation?

Mr. BERKMAN. Surely.

Mr. STEENERSON. How much an acre did that cost?

Mr. BERKMAN. That cost about \$20 an acre; what I cleared on.

Mr. STEENERSON. How much did it cost to break it?

Mr. BERKMAN. I have not broken it on account of the water proposition.

Mr. STEENERSON. You have spent that \$20 an acre since you bought it?

Mr. BERKMAN. Yes.

Mr. STEENERSON. Mr. Rockwood asked you about the land in the neighborhood and you mentioned the fact that you knew of one sale 4 miles away—that is, the Bird land—and he dropped you there. What was that land sold for?

Mr. BERKMAN. \$50 an acre.

Mr. STEENERSON. How big a tract was it?

Mr. BERKMAN. Half a section.

Mr. STEENERSON. What was the price—\$1,600?

Mr. BERKMAN. \$1,600.

Mr. STEENERSON. Mr. Rockwood knew about that; you referred to it yesterday.

Mr. BERKMAN. Yes.

Mr. ROCKWOOD. Was that a sale or a trade?

Mr. BERKMAN. I couldn't say as to that.

Mr. ROCKWOOD. It was not a sale?

Mr. BERKMAN. I understood it was a sale.

Mr. ROCKWOOD. Do you know anything about it?

Mr. BERKMAN. I asked Mr. Johnson yesterday if he knew anything about that, and he said it was \$50 an acre he got for it.

Mr. ROCKWOOD. Mr. Bird offered it in trade at \$40 an acre and even lower. It was a trading proposition for years, was it not?

Mr. BERKMAN. I do not know anything about that.

Mr. POWELL. Was any of it cleared or cultivated?

Mr. ROCKWOOD. The piece that I saw was largely cleared. It contained 320 or 400 acres, and a very large part of it was cleared and in crops. I do not know the acreage.

(The commission at 12.15 o'clock p. m. took a recess until 1.30 o'clock p. m.)

AFTER RECESS.

The commission reassembled at the expiration of the recess, all the members being present.

TESTIMONY OF MRS. ANNIE JOHNSON.

(Mrs. Annie Johnson, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mrs. JOHNSON. What we call Willow Creek.

Mr. STEENERSON. Can you give the Government description of your land?

Mrs. JOHNSON. Well, I do not think I can fully. Of course, I know what section it is in.

Mr. STEENERSON. What section is it in? Do you know the town and the range?

Mrs. JOHNSON. Yes; of course, I could easily point it out on the map. I have land in sections 2 and 3.

Mr. STEENERSON. You have 160 acres?

Mrs. JOHNSON. I have 164 and some acres.

Mr. STEENERSON. And how much of it is in section 2?

Mrs. JOHNSON. I think it is one eighty in section 2.

Mr. STEENERSON. One eighty in section 2 and the other eighty in section 3?

Mrs. JOHNSON. I think that is the way.

Mr. TAWNEY. Can you indicate on the map which quarters it is?

Mrs. JOHNSON. I think so. [Witness indicates on map.]

Mr. WHITE. It is the north half of the northwest quarter of section 2, and on the other side the east half of the northeast quarter of section 3.

Mr. MAGRATH. Township 162, north, and range 35, west.

Mr. STEENERSON. How long have you lived there?

Mrs. JOHNSON. Well, my husband filed on it in 1902, in the spring.

Mr. STEENERSON. And have you lived there since that?

Mrs. JOHNSON. Yes; I have, excepting a year or so I was away, that I was sick. That was after we proved up on it.

Mr. STEENERSON. When did you prove up?

Mrs. JOHNSON. We proved up in 1908.

Mr. STEENERSON. You took it as a homestead?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. And paid the Government the price, a dollar and a quarter an acre?

Mrs. JOHNSON. No; we did not.

Mr. STEENERSON. This was free land?

Mrs. JOHNSON. Yes; because my husband paid for those 4 acres, and those acres were over.

Mr. STEENERSON. What was the character of the land when you took it as to being prairie or timber or brush?

Mrs. JOHNSON. It was all heavy timber, poplar; of course it was some mixed, but the most of it is poplar.

Mr. STEENERSON. And you have made improvements?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. What improvements have you made?

Mrs. JOHNSON. We have cleared and cultivated some of it.

Mr. STEENERSON. How many acres have you cleared?

Mrs. JOHNSON. I think it is around 6 acres.

Mr. STEENERSON. Was that expensive clearing?

Mrs. JOHNSON. Yes; it was very expensive clearing.

Mr. STEENERSON. How much an acre did it cost to clear it?

Mrs. JOHNSON. Well, my husband did the most of it; it would surely cost us around \$60 an acre to clear it, because it is very heavy poplar timber.

Mr. STEENERSON. That is the land you have actually broken and cultivated?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. Besides that, did you clear some other part?

Mrs. JOHNSON. We cleared some meadow.

Mr. STEENERSON. And used it for hay?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. Did you do anything to that besides just clearing off the trees and brush?

Mrs. JOHNSON. We kind of disked and sowed tame grass in it.

Mr. STEENERSON. How many acres of that?

Mrs. JOHNSON. I should judge from 7 to 10 acres.

Mr. STEENERSON. And what are the buildings that you have put there?

Mrs. JOHNSON. We have one cedar log house, and then an old log house that was built; that was out of poplar.

Mr. STEENERSON. Have you any stables or barns?

Mrs. JOHNSON. Yes, sir; we had two stables.

Mr. STEENERSON. Have you been keeping stock there?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. How many head?

Mrs. JOHNSON. I have 11 head now, at present.

Mr. STEENERSON. And using it for a dairy farm?

Mrs. JOHNSON. Well, that is what we mostly do, and butter for our needs.

Mr. STEENERSON. What have you raised when you have raised something, what kind of crops?

Mrs. JOHNSON. We have raised vegetables, potatoes, and corn, and sometimes we would have a patch of potatoes and white beans, and some berries, and I have some apple trees.

Mr. STEENERSON. You planted some apple trees?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. Have you raised any apples yet?

Mrs. JOHNSON. Not yet, because they are not old enough.

Mr. STEENERSON. They are doing well?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. How far from the lake, when the lake is at its lowest, is your land?

Mrs. JOHNSON. Well, it would be a mile, I guess, from what we call the lake.

Mr. STEENERSON. In late years the lake levels have been higher?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. Than when you came there?

Mrs. JOHNSON. Oh, yes; a good deal, too.

Mr. STEENERSON. How has that affected your land?

Mrs. JOHNSON. Well, that has affected it; that is, of course, it has not been——

Mr. STEENERSON. Has it been flooded, part of it, or soaked with water?

Mrs. JOHNSON. Yes, sir.

Mr. STEENERSON. How large a part of your land?

Mrs. JOHNSON. Well, the lower part, the meadows, have been quite a bit submerged, so that it spoils the drainage quite a bit there; in hay land we used to cut hay there with a mower, and now we have to cut it with a scythe.

Mr. STEENERSON. Has it affected your house and buildings? Has it come up to your buildings?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. And gone into your cellar?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. When was that?

Mrs. JOHNSON. There has been three times the creek flowed over.

Mr. STEENERSON. How was it last spring or summer?

Mrs. JOHNSON. It was very nearly over the creek, but not quite.

Mr. STEENERSON. Was it up in your cellar then?

Mrs. JOHNSON. Yes, some.

Mr. STEENERSON. Have you any idea about the value of this land?

Mrs. JOHNSON. Oh, I have some.

Mr. STEENERSON. You have used it to produce these things?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. These farm products?

Mrs. JOHNSON. Yes, it is very productive land. I am sure there is not any better in the State of Minnesota.

Mr. STEENERSON. Fine land?

Mrs. JOHNSON. Yes; and I think there are quite a few could testify to the same, who are right here now.

Mr. STEENERSON. What would you say was the value of this land?

Mrs. JOHNSON. Well, I think, from the productiveness of it, it was worth as much as any land around here.

Mr. STEENERSON. And in this value I suppose you could include the cost of clearing it and breaking it?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. Can you fix any price on it?

Mrs. JOHNSON. Well, I do not know. I have not figured on selling or anything.

Mr. STEENERSON. There is not any land sold in your immediate neighborhood?

Mrs. JOHNSON. Well, lately, there has not been.

Mr. STEENERSON. How much of a family have you?

Mrs. JOHNSON. I have three children.

Mr. STEENERSON. And where is your husband?

Mrs. JOHNSON. He is dead.

Mr. STEENERSON. You are running the farm yourself?

Mrs. JOHNSON. Yes; with the help of my boys.

Mr. STEENERSON. How big are your boys?

Mrs. JOHNSON. One is 19, and one is 15, and the little girl is 9.

Mr. STEENERSON. There are other farms along near the lake in your neighborhood?

Mrs. JOHNSON. Yes; the lands are all taken up around there.

Mr. STEENERSON. Have some of these neighbors of yours that you know of been hurt by the high water?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. Lands been submerged?

Mrs. JOHNSON. Yes.

Mr. STEENERSON. And those farms have part of the land cleared also?

Mrs. JOHNSON. Yes; a Mr. Johnson has some cleared.

Mr. STEENERSON. How much has he cleared?

Mrs. JOHNSON. I could not say.

Mr. STEENERSON. Thirty or forty acres?

Mrs. JOHNSON. Probably he has; he has got meadow.

Mr. STEENERSON. They are a good deal in the same situation as you are?

Mrs. JOHNSON. Yes.

Mr. TAWNEY. When your husband cleared the land, did you get anything from the timber you took off the land?

Mrs. JOHNSON. We have not sold any.

Mr. TAWNEY. Any timber or firewood?

Mrs. JOHNSON. We had too far to the market to haul the poplar.

Mr. TAWNEY. You got nothing out of the timber you cut off the land?

Mrs. JOHNSON. No.

Mr. TAWNEY. Except for firewood?

Mrs. JOHNSON. Firewood; yes.

Mr. STEENERSON. For your own house?

Mrs. JOHNSON. Yes; and we sawed a few boards.

Mr. TAWNEY. When did you build the house?

Mrs. JOHNSON. The first house we built in the fall of 1902.

Mr. TAWNEY. I mean the house you are living in now.

Mrs. JOHNSON. Well, we built that in 1905. Of course, we are living in both now.

Mr. MAGRATH. How far are you from Warroad?

Mrs. JOHNSON. We call it from 10 to 12 miles across the lake.

Mr. MAGRATH. By road?

Mrs. JOHNSON. I do not know exactly. We have not any road to Warroad so far unless to go away up around.

Mr. MAGRATH. There is no way of driving down there to look at that piece of property?

Mrs. JOHNSON. You can drive up around Roosevelt or Swift; there would probably be a road that would come in.

Mr. GLENN. What year was your best crop?

Mrs. JOHNSON. I think it was in the years since it was dryest.

Mr. GLENN. In what year was that?

Mrs. JOHNSON. 1910 and 1911.

Mr. GARDNER. Are your lands submerged during the entire season now or only at short periods?

Mrs. JOHNSON. They are not much submerged now.

Mr. GARDNER. Is the time they are submerged any more extended now than it was when you first went there?

Mrs. JOHNSON. It is all dry now. We never expected to see the creek run over when we came there for a good many years.

Mr. TAWNEY. What creek do you speak of? Willow Creek?

Mrs. JOHNSON. Willow Creek.

Mr. GARDNER. Is that from the backwater or the running water coming down?

Mrs. JOHNSON. It is the backwater from the creek.

Mr. GARDNER. Not caused by the water running down in floods, but just backing up?

Mrs. JOHNSON. It is backing up, and it makes it so much worse when the heavy rains come; it will make it flow over.

Mr. TAWNEY. Is any of your land now covered with water?

Mrs. JOHNSON. It is not covered with water just now.

Mr. TAWNEY. Has it been covered with water since you have been there?

Mrs. JOHNSON. Yes.

Mr. TAWNEY. When?

Mrs. JOHNSON. This summer, more than ever.

Mr. TAWNEY. Was the land covered with water, or was it the seepage under the surface?

Mrs. JOHNSON. Some part of it was covered with water, standing water, there.

Mr. TAWNEY. How much of it was covered with water?

Mrs. JOHNSON. From 1 to 2 acres, I should judge.

Mr. STEENERSON. The lake backed the water up from Willow Creek, and it came from the creek over to your land; is that it?

Mrs. JOHNSON. Yes, it did, around the clearing, away up to the doorstep.

Mr. POWELL. Is your house near the northern end?

Mrs. JOHNSON. It is right near the northern line; yes.

Mr. POWELL. There is a little piece there on which that would take place during the last season, but it is a tremendously small piece. There is not a piece of her land that is below 1,063.

Mr. ROCKWOOD. Were you among the earliest to settle in that neighborhood?

Mrs. JOHNSON. We were among the earliest.

Mr. POWELL. Let me understand you, because by the line given by the surveyors there would not be any water flowing on to your land;

it would be too high. When you say there was water on it, do you mean the lake came in up on it, or the water stood on it from rain, and that sort of thing?

Mrs. JOHNSON. The meadow?

Mr. POWELL. Yes.

Mrs. JOHNSON. Well, it backs up.

Mr. POWELL. Would it be the rainfall that filled it up, or would it be the backing up of the waters of the lake?

Mrs. JOHNSON. I understand it can not run where that runs because the water is still standing right there, and if it runs it will not run off at all; it will stand there.

Mr. POWELL. Was the water in just a few places, or was there a sheet of water over it?

Mrs. JOHNSON. It was not a real sheet of water.

Mr. STEENERSON. I understand you say there was some water coming from Willow Creek?

Mrs. JOHNSON. Yes; around the house it was all over water, because it ran right over.

Mr. STEENERSON. It ran right over from Willow Creek over the surface of the ground last summer?

Mrs. JOHNSON. Yes; we had to make bridges to go to the chicken house from the barn.

Mr. STEENERSON. How far would your house be from the lake?

Mrs. JOHNSON. I would judge a mile.

Mr. STEENERSON. And you are up a mile from the mouth of Willow Creek?

Mr. TAWNEY. I would judge it would be a mile.

Mr. POWELL. Is your house right near Willow Creek?

Mrs. JOHNSON. Yes.

TESTIMONY OF LARS ENGSTROM.

(Lars Engstrom, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. ENGSTROM. Willow Creek.

Mr. STEENERSON. Can you give the Government description of your land?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. What is it?

Mr. ENGSTROM. Section 35.

Mr. STEENERSON. What part of section 35?

Mr. ENGSTROM. I do not understand the English enough.

(Witness points to his land on map.)

Mr. STAIRS. It is the north half of the northeast quarter of section 35 and the northwest quarter of the southeast quarter of section 35; the southeast quarter of the south east quarter of section 26—160 acres—not all proved up. He has proved up to 40 in the southeast quarter of 35.

Mr. STEENERSON. How many acres does that make?

Mr. STAIRS. One hundred and sixty. He has proved up on 40, and the balance is not proved up.

Mr. STEENERSON. What was the character of this land when you took it? Was it prairie, timber, brush, or meadow?

Mr. ENGSTROM. Poplar, oak, ash, and elm.

Mr. STEENERSON. Any brush on it?

Mr. ENGSTROM. No. On the homestead I proved up, poplar, elm, oak, and ash.

Mr. STEENERSON. Where was the brush?

Mr. ENGSTROM. Yes; there was a little brush.

Mr. STEENERSON. The brush was on the homestead?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. How much land have you cleared?

Mr. ENGSTROM. Ten acres of what I have proved up.

Mr. STEENERSON. What was that clearing? Was it brush or timber?

Mr. ENGSTROM. All timber.

Mr. STEENERSON. Have you cultivated that 10 acres to crops?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. How much did it cost per acre to clear that land?

Mr. ENGSTROM. \$25 an acre.

Mr. STEENERSON. Have you cleared any of the other lands?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. How much?

Mr. ENGSTROM. Four or five acres.

Mr. STEENERSON. How much did it cost per acre to clear that?

Mr. ENGSTROM. \$25 or \$20 an acre.

Mr. STEENERSON. Have you raised crops on that also?

Mr. ENGSTROM. No; it got too wet.

Mr. STEENERSON. How many years ago did you first move on to this land?

Mr. ENGSTROM. Ten years since I moved on the homestead; it is two years since I took the additional.

Mr. STEENERSON. But you have lived there all that time?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. So that you have seen the condition each year with reference to the water from the lake?

Mr. ENGSTROM. Yes; the land I proved up I sowed. I had a crop on that every year.

Mr. STEENERSON. What buildings have you?

Mr. ENGSTROM. Log house.

Mr. STEENERSON. Stable?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. Granary?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. How many buildings all together?

Mr. ENGSTROM. Three; and root house and cellar.

Mr. STEENERSON. What kind of crops have you raised?

Mr. ENGSTROM. Potatoes, wheat, oats, cabbage, and carrots.

Mr. STEENERSON. When I speak of this land I mean of the 160 acres. Has it been affected by the water?

Mr. ENGSTROM. On the homestead there is 80 acres under water.

Mr. STEENERSON. That is on the 160 acres?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. How much of the land have you cut hay on?

Mr. ENGSTROM. Fifteen acres.

Mr. STEENERSON. Has there been any difference in the different years about the land being covered with water?

Mr. ENGSTROM. Some years more and some years less. This year there has been more than ever.

Mr. STEENERSON. How near to your buildings does this water come?

Mr. ENGSTROM. Thirty rods. That is on the new place.

Mr. STEENERSON. You have two sets of buildings?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. On what part of the land you now have as additional homestead are the buildings?

Mr. ENGSTROM. Northeast quarter of section 35.

Mr. STEENERSON. Do you mean the northeast 40?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. That is where your house is?

Mr. ENGSTROM. Yes.

Mr. STEENERSON. It is rather difficult to get out the evidence. You can cross-examine now.

TESTIMONY OF C. E. CARLQUIST.

(C. E. Carlquist, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. CARLQUIST. Warroad.

Mr. STEENERSON. How long have you lived here?

Mr. CARLQUIST. I lived in the village of Warroad since 1902.

Mr. STEENERSON. Where did you live immediately before that?

Mr. CARLQUIST. The winter before?

Mr. STEENERSON. Immediately before.

Mr. CARLQUIST. I lived on the homestead east of Warroad.

Mr. STEENERSON. Near the lake?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Have you got that homestead yet?

Mr. CARLQUIST. No; I have not.

Mr. STEENERSON. You have lived in Warroad then since 1902?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. You are in business here?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. What kind of business?

Mr. CARLQUIST. General merchandise.

Mr. STEENERSON. You are, of course, acquainted with that part of the lake shore where you had your homestead?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. When did you prove up your homestead?

Mr. CARLQUIST. I proved up in the spring of 1902.

Mr. STEENERSON. Will you give us a description of that homestead?

Mr. CARLQUIST. It is the south half of the southeast quarter of section 2, and the northeast quarter of the southeast quarter, and the northwest quarter of the southwest of section 1.

Mr. STEENERSON. In what township?

Mr. CARLQUIST. In 162, range 36.

Mr. STEENERSON. What was the character of that land when you first got it?

Mr. CARLQUIST. Meadow land.

Mr. STEENERSON. Was there any timber or brush on it?

Mr. CARLQUIST. Yes, there was some timber on it.

Mr. STEENERSON. Did you do any clearing?

Mr. CARLQUIST. Yes; I cleared about 40 acres on the north half of the quarter section.

Mr. STEENERSON. The land in that quarter is about the same as the rest of the land in that vicinity?

Mr. CARLQUIST. Yes; it is the same thing.

Mr. STEENERSON. What would you say as to the fertility of the soil and so on?

Mr. CARLQUIST. Well, it is all the way from 10 to 12 to 15 inches of loam and the subsoil is clay.

Mr. STEENERSON. How is it as to productiveness?

Mr. CARLQUIST. Well, it is good. It is the best kind of soil, as the farmers term it here.

Mr. STEENERSON. And you raised crops on it?

Mr. CARLQUIST. Yes. I did not raise any crop but a small garden at the time I was there, but I put up hay on it in the spring of 1900; I put up about 60 tons of hay on it.

Mr. STEENERSON. How far is that from Warroad?

Mr. CARLQUIST. It is 5 miles from Warroad.

Mr. STEENERSON. Is Warroad the market for them?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Have you been familiar the last few years with the value of that land?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. And land similar to that along the lake shore?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. What can you say as to the value of it?

Mr. CARLQUIST. Well, that land to-day, with the improvements on it, would have a market value of from—of course it depends a great deal on the man who owns it, what he wants to sell for—from \$5,000 to \$6,000, I would say.

Mr. STEENERSON. How many acres?

Mr. CARLQUIST. One hundred and sixty acres.

Mr. STEENERSON. You live here in Warroad?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Are you acquainted with the other meadow lands between here and Rainy River, along the lake shore? Have you had occasion to examine them?

Mr. CARLQUIST. Yes; I walked the lake shore between Warroad and Rainy River—that is the mouth of Rainy River—that is the whole of the lake shore. I used to buy timber along the lake shore, so that I have been there different times.

Mr. STEENERSON. What would you say as to the value of these meadow lands adjacent to the lake, on the supposition that that lake had a low level, like it was, for instance, when it was the lowest?

Mr. CARLQUIST. Well, similar lands—that is improved and under cultivation—around Warroad and adjacent to the railway tracks—are all the way from \$50 to \$100 an acre.

Mr. STEENERSON. Of course, when the lake is up as high as it was this summer these lands are flooded?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. And are they worth anything then?

Mr. CARLQUIST. No, sir; not for farming purposes.

Mr. STEENERSON. Well, for any purpose?

Mr. CARLQUIST. Well, they might be worth something for the interests that has raised the lake here; I do not know.

Mr. STEENERSON. I would like to state that that concludes the testimony of the farm feature of it, but this witness is a merchant here in town, and I want to ask him some other questions on the other branch of the case, but perhaps they would want to cross-examine him on this question now, or I could finish the examination now.

Mr. TAWNEY. As to the effect on the village here?

Mr. STEENERSON. Yes. You have a residence here, I believe?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Where is that?

Mr. CARLQUIST. Down on the river bank.

Mr. STEENERSON. What do you call it, north or east?

Mr. CARLQUIST. It will be east on Lake Street.

Mr. STEENERSON. East part of the town?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. How far from the lake shore?

Mr. CARLQUIST. Right on the river bank.

Mr. STEENERSON. That is the Warroad River here?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. That is below where the docks are, is it not?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. East of that?

Mr. CARLQUIST. Yes; east of there.

Mr. STEENERSON. How much higher has the water been this last summer than when you built your house there?

Mr. CARLQUIST. Oh, it has been, I would judge, about two and a half feet.

Mr. STEENERSON. When did you build it?

Mr. CARLQUIST. I built it in 1905; in the fall of 1905 I think.

Mr. STEENERSON. Has this high level affected your land or your house?

Mr. CARLQUIST. Well, it does affect it yet.

Mr. STEENERSON. In what way?

Mr. CARLQUIST. Well, it washes the river banks down in the spring of the year particularly.

Mr. STEENERSON. How much has disappeared and been washed away?

Mr. CARLQUIST. Since I got there possibly a couple of rods wide at some places and at some places not that.

Mr. STEENERSON. How big a front had you?

Mr. CARLQUIST. Four hundred foot front.

Mr. STEENERSON. And it washed away 30 or 40 feet along the whole front?

Mr. CARLQUIST. I would think something like that.

Mr. STEENERSON. How far is the present bank from your residence?

Mr. CARLQUIST. Oh, it is probably some 60 or 70 feet now. I have been filling in there, trying to protect it.

Mr. STEENERSON. You have been trying to protect it?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Can you describe this residence of yours—is it frame or brick?

Mr. CARLQUIST. Frame.

Mr. STEENERSON. How many stories?

Mr. CARLQUIST. Two stories and a basement.

Mr. STEENERSON. What did it cost?

Mr. CARLQUIST. Oh, it cost in the neighborhood of \$5,000.

Mr. STEENERSON. And how many feet back from the bank does your lot extend, according to your original deed, when you got it?

Do you know how many feet deep it was? You said 400 feet front.

Mr. CARLQUIST. It was 225 feet, I think.

Mr. STEENERSON. And that has been fenced, has it?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Put into garden or lawn?

Mr. CARLQUIST. Well, I had it in a garden.

Mr. STEENERSON. Any other buildings except your residence on it?

Mr. CARLQUIST. No.

Mr. STEENERSON. Has the high water affected your cellar?

Mr. CARLQUIST. No; not there.

Mr. STEENERSON. How high is the bank?

Mr. CARLQUIST. The banks are now about 4 feet, I should judge.

Mr. STEENERSON. If the lake were raised 4 feet more, what would be the effect on your residence?

Mr. CARLQUIST. Of course it is needless to say that if this lake was raised 4 feet more there would be no more Warroad here, because it will come a storm, and any storm will wash all over the town. It comes up on Lake Street now if there is a storm.

Mr. STEENERSON. It would destroy the town?

Mr. CARLQUIST. Absolutely.

Mr. STEENERSON. Besides this residence you also have a business block where you carry on your general merchandise business?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. How big a building is that?

Mr. CARLQUIST. It is 120 by 60.

Mr. STEENERSON. Is that brick?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Two stories?

Mr. CARLQUIST. Yes; two stories.

Mr. STEENERSON. Used for your store downstairs and your basement?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. And upstairs also?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. What did that building cost?

Mr. CARLQUIST. \$25,000.

Mr. STEENERSON. Is there a basement on the whole block?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. When was that built?

Mr. CARLQUIST. Built in 1913.

Mr. STEENERSON. How has it been during the last summer, when the water was high, about the basement?

Mr. CARLQUIST. Well, the basement has been all right. The high water does not affect that any. They have a drainage there. The village has installed a sewer system here a year ago last spring. They put in a sewerage system and of course at high water it rises so high it would flood all the basements in town.

Mr. STEENERSON. The sewer floods into the basement?

Mr. CARLQUIST. It would if they gave it a natural drainage, but they have installed what they call a lift; they drain into the lift and they dump it out of that.

Mr. STEENERSON. So that the drainage level is below the level of the lake?

Mr. CARLQUIST. It would be in time, and as it stands to-day it would be just about level with the lake.

Mr. STEENERSON. There would not be any fall into the river now?

Mr. CARLQUIST. No; there would not.

Mr. STEENERSON. Has that affected your basement—this jacking up of the sewer?

Mr. CARLQUIST. No; not where they have the lift.

Mr. STEENERSON. I understood you to say you were pumping your basement?

Mr. CARLQUIST. I guess you could do that——

Mr. STEENERSON. You have not any pumping arrangement in your basement?

Mr. CARLQUIST. No.

Mr. STEENERSON. Is there any drainage from your basement into the city drainage system?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. You have a connection from your basement over to the city drainage?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. Now, what, if any, official position do you occupy here?

Mr. CARLQUIST. I have no official position, except a member of the school board.

Mr. STEENERSON. You are a member of the school board?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. How long have you been a member of the school board?

Mr. CARLQUIST. Thirteen years.

Mr. STEENERSON. Have you built a school building?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. When was it completed?

Mr. CARLQUIST. It was built in 1912.

Mr. STEENERSON. At what cost?

Mr. CARLQUIST. It cost about \$25,000 to build.

Mr. STEENERSON. How many stories high?

Mr. CARLQUIST. Two stories and a basement.

Mr. STEENERSON. All brick?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. How has the high water affected the basement of that building?

Mr. CARLQUIST. This spring, whenever they had an easterly wind, so that they would raise the water in the river, it would come into the basement, and it soaked through the cement foundation there and destroyed the painting on the wall and blackboards, which we had to repair, and the damage to the building would not be so great as the sanitary conditions of it.

Mr. STEENERSON. What can you say as to the sanitary conditions of it?

Mr. CARLQUIST. You know how it is. It is hard for a school district to stay there unless we get a perfect sanitary condition in the schoolhouse, and it naturally would not be that with the dampness that way.

Mr. STEENERSON. It affected the conditions?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. What is the extent of the school grounds where the schoolhouse stands?

Mr. CARLQUIST. We have $4\frac{1}{2}$ acres.

Mr. STEENERSON. Is there only one schoolhouse?

Mr. CARLQUIST. No; we have three buildings.

Mr. STEENERSON. Three buildings?

Mr. CARLQUIST. There is an old log schoolhouse and a frame building.

Mr. STEENERSON. Are they all on this $4\frac{1}{2}$ acres?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. How does that compare in level with the rest of the town?

Mr. CARLQUIST. It is possibly about a foot or so higher than where I live.

Mr. STEENERSON. Do you know anything about the rest of the cellars under the buildings in town here affected by water?

Mr. CARLQUIST. Well, as a matter of fact, they can not very well put down a cellar; if they put down a cellar to get any depth of cellar—that is, 5 or 6 feet—they would be all affected with it under high water, when the water rises. The way I built my residence, I just dug down $2\frac{1}{2}$ feet, and hauled the dirt, and filled up on the outside.

Mr. STEENERSON. I notice on the street corner there are some cellars without any buildings over them?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. With the water standing in them?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. When the lake was lower than it is now would that disappear?

Mr. CARLQUIST. Yes.

Mr. STEENERSON. And it raises when the lake raises?

Mr. CARLQUIST. Yes; it don't raise very much; it is just about on a level with the lake.

Mr. TAWNEY. What is the depth of those cellars?

Mr. CARLQUIST. About 6 to $6\frac{1}{2}$ feet.

Mr. MIGNAULT. Does the Warroad River freeze over in winter?

Mr. CARLQUIST. Yes.

Mr. MIGNAULT. And the lake also?

Mr. CARLQUIST. Yes.

Mr. MIGNAULT. When the ice goes out of the Warroad River, does it ever block the river?

Mr. CARLQUIST. No.

Mr. MIGNAULT. It goes out freely into the lake?

Mr. CARLQUIST. Yes.

Mr. MIGNAULT. About what time does the ice melt?

Mr. CARLQUIST. Well, it is about the 1st of May; about May; the Warroad River opens up generally about the 1st of April.

Mr. MIGNAULT. Is the water higher at the time of the melting of the ice than at other seasons?

Mr. CARLQUIST. No; it is lowest then. The lake raises here generally in August.

Mr. MIGNAULT. When the ice goes out of the river, how does it affect the banks?

Mr. CARLQUIST. It don't affect them any.

Mr. MIGNAULT. Not at all?

Mr. CARLQUIST. Not till it starts to get windy.

Mr. MIGNAULT. It does not wear away the banks?

Mr. CARLQUIST. No; not at all.

Mr. GLENN. What did you sell the 160 acres of land for?

Mr. CARLQUIST. I sold it for \$1,600.

Mr. GLENN. How long ago?

Mr. CARLQUIST. It was in 1906.

Mr. POWELL. That was a time of good prices and good business in the country, in 1906?

Mr. CARLQUIST. Yes; the businesses were good, but the land was not very good.

Mr. POWELL. The business crash took place the next year, 1907?

Mr. GLENN. What is that land worth now?

Mr. CARLQUIST. From \$4,000 to \$6,000 now.

Mr. GLENN. Would it be worth that now?

Mr. CARLQUIST. I think so, yes.

Mr. GLENN. In 1906, you say it was only worth \$1,500?

Mr. CARLQUIST. Yes.

Mr. GLENN. And now it is worth \$6,000?

Mr. CARLQUIST. Yes.

Mr. GLENN. It has increased in value?

Mr. CARLQUIST. Yes.

Mr. GLENN. It has not been very much damaged, then?

Mr. CARLQUIST. Yes, it has; but the parties that got it opened up 80 acres and built good buildings, good granary, one of the finest improved farms in the country. I sold it for the reason that the water raised on it and drowned me out.

Mr. MAGRATH. You sold it to Carlson?

Mr. CARLQUIST. Yes.

Mr. MAGRATH. That is the gentleman who testified here?

Mr. CARLQUIST. I do not know.

Mr. MAGRATH. It is the same man.

Mr. POWELL. And your value of \$5,000 includes all the improvements?

Mr. CARLQUIST. I would say from \$4,000 to \$6,000. It is just my way of putting a valuation on it.

Mr. POWELL. He said his dwelling cost him \$3,000.

Mr. CARLQUIST. Maybe it has.

Mr. POWELL. That would be a fair valuation?

Mr. CARLQUIST. Well, I guess so from the road; I really do not know what he wants for it.

Mr. POWELL. There are good outside buildings on it?

Mr. CARLQUIST. Yes, he has good buildings on it.

Mr. TAWNEY. What time last year did you have the highest water? You spoke about when the water was the highest that it affected the basement of your school building?

Mr. CARLQUIST. It did not affect us anything last year, some way or another.

Mr. TAWNEY. When was it?

Mr. CARLQUIST. It was this spring.

Mr. TAWNEY. What time this spring was it?

Mr. CARLQUIST. It must have been about June.

Mr. TAWNEY. Was that during an eastern storm?

Mr. CARLQUIST. Yes.

Mr. TAWNEY. How long did the storm continue?

Mr. CARLQUIST. About a day or so; it did not take very long.

Mr. TAWNEY. When the storm was over, did the water recede then?

Mr. CARLQUIST. Yes, it would recede.

Mr. TAWNEY. Do you have those eastern storms here frequently?

Mr. CARLQUIST. Oh, not so often.

Mr. TAWNEY. Do you know what the Government gauge reading was here at that time?

Mr. CARLQUIST. No, I know nothing about the gauge reading; that is something I never looked at; I do not know anything about it.

Mr. TAWNEY. You say it was May of this year, or June?

Mr. CARLQUIST. I think it was about June.

Mr. KEEFER. What is the height of your cellar in your house?

Mr. CARLQUIST. The residence?

Mr. KEEFER. Yes.

Mr. CARLQUIST. It is seven feet.

Mr. KEEFER. And in digging out and erecting a house you went down to what depth?

Mr. CARLQUIST. Two and a half feet.

Mr. KEEFER. And kept the house up the difference?

Mr. CARLQUIST. Yes.

Mr. KEEFER. And what is the depth of the school building?

Mr. CARLQUIST. It is 6 feet.

Mr. KEEFER. I am speaking of the cellar.

Mr. CARLQUIST. Yes; it is 6 feet.

Mr. KEEFER. What depth did they go down?

Mr. CARLQUIST. They went down 6 feet.

Mr. KEEFER. They did not adopt your policy of making it shallower and shoving it up more?

Mr. CARLQUIST. No. We dug it down 6 feet and put a cement floor and basement on top of it.

Mr. KEEFER. Have you a cement floor in your house?

Mr. CARLQUIST. No.

Mr. KEEFER. You could have one?

Mr. CARLQUIST. Yes.

Mr. KEEFER. Is that the first one below the docks on this side?

Mr. CARLQUIST. Yes; it is right in the bend there.

Mr. KEEFER. What color is it?

Mr. CARLQUIST. It is gray.

Mr. KEEFER. And has the schoolhouse the same drainage as your store?

Mr. CARLQUIST. I think the schoolhouse has got a higher level of drainage than my store has.

Mr. KEEFER. But they are not connected up on the same drain?

Mr. CARLQUIST. No.

Mr. KEEFER. You drain directly into the river?

Mr. CARLQUIST. You drain directly into the river, and those people that put in the drainage and sewerage around the block had put a tank for the lift.

Mr. KEEFER. They do not go into the tank direct?

Mr. CARLQUIST. No.

Mr. STEENERSON. I want to ask some questions on another branch of this case. You are familiar with the real estate values in this town?

Mr. CARLQUIST. Well, fairly well; in a general way I am.

Mr. STEENERSON. And you just stated a while ago that if the level of the lake was raised 4 feet more it would affect the whole of the village of Warroad?

Mr. CARLQUIST. It would absolutely destroy the village.

Mr. STEENERSON. And, as it is, in what way has it affected the prosperity of the town?

Mr. CARLQUIST. Well, it is affected greatly as to the prosperity of the town. If this lake had been low at the same stage it was when I filed on the homestead, we would have had more sandy shore and high bank. All the lands around the lake shore would have been settled; there would have been people living there, and there would have been fine summer resorts there, and it would be almost unlimited, the prosperity we would have had, if it had been such.

Mr. STEENERSON. I noticed yesterday some letters were read from railway companies interested in summer-resort traffic; and you think the submergence of these sand beaches has affected the place as a summer resort?

Mr. CARLQUIST. It certainly has.

Mr. STEENERSON. In what way?

Mr. CARLQUIST. Well, the water comes up, raises so high, it is nothing but a swamp or a marsh all along the lake shore; people looking for a summer resort have no banks; it is simply nothing here but muskeg and slush.

Mr. STEENERSON. Do you know about what the population of Warroad is?

Mr. CARLQUIST. We have not taken any census since 1910; it was 933 then; judging by the school attendance, we then had some 45 pupils here, and now we have in the neighborhood of 300; we would think they have about 1,500 people here; I would judge so safely.

Mr. TAWNEY. You had 900 in 1910?

Mr. CARLQUIST. Nine hundred and thirty-three.

Mr. TAWNEY. How many banks?

Mr. CARLQUIST. Two banks.

Mr. TAWNEY. Do you know what their capital stock is?

Mr. CARLQUIST. One is \$15,000 and the other \$20,000.

Mr. TAWNEY. Do you know what their deposits are?

Mr. CARLQUIST. One has a deposit of \$120,000 or \$130,000 and the other in the neighborhood of \$100,000.

Mr. TAWNEY. How many railroads here?

Mr. CARLQUIST. Two.

Mr. TAWNEY. What are they?

Mr. CARLQUIST. Great Northern and Canadian Northern.

Mr. TAWNEY. It is the terminus of the Great Northern?

Mr. CARLQUIST. Yes.

Mr. TAWNEY. And there are immigration and customs officers and such things here?

Mr. CARLQUIST. Yes.

Mr. TAWNEY. Do you know anything about the taxable valuation of the real estate in the town?

Mr. CARLQUIST. Yes; I know something about it.

Mr. TAWNEY. How much is it?

Mr. CARLQUIST. It is about \$140,000.

Mr. TAWNEY. Real estate or personal property?

Mr. CARLQUIST. Real estate. I can get the exact figures, I think; I think it is some \$240,000 real and personal.

Mr. TAWNEY. I think it is more than that.

Mr. CARLQUIST. Well, it may be more.

Mr. KEEFER. Since we were here two years ago there has been some improvement. How many brick blocks have been constructed since the commission held hearings here in 1912?

Mr. CARLQUIST. Possibly three.

Mr. KEEFER. The schoolhouse has been constructed since then?

Mr. CARLQUIST. It was under construction at the time you were here in 1912.

Mr. KEEFER. Have you had any navigation in here during that period?

Mr. CARLQUIST. Not much.

Mr. KEEFER. Did the *Kenora* come in last year?

Mr. CARLQUIST. She made a few trips last year.

Mr. KEEFER. She has not come in this year?

Mr. CARLQUIST. No.

Mr. KEEFER. Do you desire to have the boats come in here, or not?

Mr. CARLQUIST. I think it would be desirable; yes.

Mr. KEEFER. Why?

Mr. CARLQUIST. It would make business for the place, I think.

Mr. KEEFER. Would you have any wider market than you would have simply by rail if you had the boats coming in?

Mr. CARLQUIST. No; it would not open the market very much; that is, as far as the *Kenora* is concerned; but it would create some tourist business in town.

Mr. KEEFER. Did you not use to bring fish in here and ship it from here?

Mr. CARLQUIST. She did haul in a few boxes, but she hauled them from the fishery. They have their regular boat anyway, so that would not change it any.

Mr. KEEFER. Would it be any benefit to have trade by water with all the towns along the banks of the Rainy River?

Mr. CARLQUIST. It would benefit the town if they had boat traffic here.

Mr. KEEFER. There is no such traffic at present?

Mr. CARLQUIST. There are gasoline launches traveling all the time.

Mr. KEEFER. I mean better boats than the ordinary sized gasoline launches.

Mr. CARLQUIST. That would apply to the tourist business entirely, because so far as the town is concerned and the present settlements around the lake it would not make much difference.

Mr. KEEFER. Speaking of the tourist matter, did there used to be much tourist traffic here?

Mr. CARLQUIST. Quite a few came here in the early days, more so than now.

Mr. KEEFER. People used to come down and take that trip across the lake, stopping at Rainy River and Fort Frances and the towns on the American side?

Mr. CARLQUIST. Quite a few.

Mr. KEEFER. The trip ran through the islands?

Mr. CARLQUIST. Yes.

Mr. KEEFER. Has that ceased?

Mr. CARLQUIST. I do not know that it has ceased entirely, but the *Kenora* does not come in here and, of course, they have no big boats to go on.

Mr. KEEFER. Would you consider it advisable for the Rainy River district to have a continuance of that traffic?

Mr. CARLQUIST. Yes; I do not see how they could discontinue it.

Mr. KEEFER. You are a very intelligent man and can give us information that we want to get. Speaking of that river business, is there anything shipped out from there by boat, either in the way of lumber, logs, or merchandise?

Mr. CARLQUIST. I do not know much about the Rainy River. I think there are some logs going down there. I know, in a general way, that there is business on the Rainy River, but personally I do not know so much about it.

Mr. KEEFER. During the two years that have elapsed since the commission sat here, what has been the state of the river according to your general observations? Of course, we have it accurately from the engineers.

Mr. CARLQUIST. It has not been very much different. Last summer I think it was just about the same as this year; not very much difference.

Mr. KEEFER. That would be 1914. How was it in 1913? I think we have had testimony to the effect that it was 1060 then.

Mr. CARLQUIST. I think it was a little lower than it is now.

Mr. KEEFER. But practically for the past two years the water has been about the same.

Mr. CARLQUIST. Yes; most of that time it has been about the same.

Mr. KEEFER. To what do you ascribe this general appearance of prosperity that the town has that strikes one coming in here? I notice it is so much different from what it was when we came in here two years ago. Is it due to another railroad coming in in the meantime?

Mr. CARLQUIST. No; I do not know of any other railroad here.

Mr. KEEFER. Everyone seems to be getting along very nicely so far as one can see. You can give no particular cause for it?

Mr. CARLQUIST. No; nothing except the natural conditions of the country here.

Mr. KEEFER. But you think if you had navigation here in the Rainy River district and the Kenora also coming in it would tend to help it?

Mr. CARLQUIST. That depends upon what condition you have. I would say if you were going to have high water for the sake of getting navigation we do not want any navigation. If we get low water and get more settlers around this country we would have better prosperity than with navigation.

Mr. KEEFER. With regard to more settlers, I suppose it is only a question of distance back from the river before you get to a level where the water has no effect, so that the settlers can go on that territory?

Mr. CARLQUIST. Away back from the lake you would have a level where the water would not affect it; that is true.

Mr. KEEFER. How do you find these lands around here assessed? At about what percentage of their values are they assessed? I am not speaking of the town; I am speaking of property outside of the town.

Mr. CARLQUIST. I have five or six pieces of land and none of them are improved very much except one. I have a piece of land in section 5, township 162, branch 35. I think it is right down by the lake shore there. I think that is assessed at \$21.

Mr. KEEFER. Per acre?

Mr. CARLQUIST. You mean the taxable value?

Mr. KEEFER. For how much is it assessed per acre?

Mr. CARLQUIST. That I do not know.

Mr. TAWNEY. The valuation is fixed and then the assessed value is $33\frac{1}{3}$ per cent of the actual value.

Mr. KEEFER. If that is clear, that is all right.

Mr. POWELL. What is the actual value placed on your lands by the assessors?

Mr. CARLQUIST. I do not know that. They have a uniform system of assessing land in the county. They assess it at the same rate all over, so much an acre.

Mr. TAWNEY. You said in your direct testimony that if the level of the lake were raised 4 feet it would practically wipe out the village of Warroad.

Mr. CARLQUIST. Yes, sir.

Mr. TAWNEY. Do you know what level that would be, if it were 4 feet higher than it is now?

Mr. CARLQUIST. No.

Mr. TAWNEY. Well, it is 1060.6 now; so it would have to be 1064.

Mr. KEEFER. The Canadian Northern station has been built since the commission was here in 1912, has it not?

Mr. CARLQUIST. Yes, sir.

Mr. STEENERSON. The gentleman referred to the traffic with the lake shore. You may state whether the high water has affected the traffic with the lake shore or not.

Mr. CARLQUIST. It has to a certain extent. There are a good many settlers that have had to move away from the lake shore. I was one of them myself.

Mr. STEENERSON. This high water as compared with what it was in years past has made it more difficult to get to the boats than it was when the lake was lower?

Mr. KEEFER. Do not lead him.

Mr. CARLQUIST. Yes; it would be in some places. In certain places it would be easier to get to the boats, but the water would come up on the land and the people could not live there; I mean those near to the lake shore.

Mr. STEENERSON. The fact that the lake is so very high in very many places makes it difficult to get to the deep water?

Mr. MIGNAULT. That is a leading question. I do not think it is proper.

Mr. CARLQUIST. At some places it would affect it and in some places it would improve it. That would depend on the condition of the lake shore.

Mr. STEENERSON. With regard to these boats—take, for instance, the Kenora; being a Canadian boat, you understand, do you not, that it can not do any business from Warroad to another American port?

Mr. CARLQUIST. Yes; I know that very well because I have been interested in it.

Mr. STEENERSON. It would have to go from an American port to a Canadian port and vice versa.

Mr. CARLQUIST. Yes.

Mr. ANDERSON. International trade is the best kind of trade.

Mr. STEENERSON. The inference from the examination was that the Kenora could do a business with the south shore, which it can not. It has to go over to Canada and the Rainy River. You understand the law in that regard, do you not, Mr. Carlquist?

Mr. CARLQUIST. Yes; I understand that.

Mr. STEENERSON. And the Kenora did not do any business with the American shore and Warroad.

Mr. CARLQUIST. No.

Mr. STEENERSON. In your cross-examination a moment ago you spoke about the prosperity of the town having some relation to the influx or otherwise of settlers. Can you explain that?

Mr. KEEFER. Are you speaking of the last two years?

Mr. STEENERSON. I have no qualification to make. I stand by the question.

Mr. CARLQUIST. Partly, I think, the prosperity, particularly with reference to the building, is caused by all the town having been burned down; they are building nothing but new buildings.

Mr. TAWNEY. When was this fire?

Mr. CARLQUIST. It was three years ago, I think.

Mr. STEENERSON. Does any proportion of the trade and prosperity of Warroad depend upon the settlement of the country?

Mr. CARLQUIST. All of it.

Mr. STEENERSON. So that if any of it were drowned out it would affect the business of Warroad?

Mr. CARLQUIST. Yes; it would.

Mr. ANDERSON. 1910 and 1911 were years of low water, were they not, Mr. Carlquist?

Mr. CARLQUIST. We had some years of low water here. It is hard for me to remember.

Mr. ANDERSON. You remember four or five years back that there were a couple of years of low water?

Mr. CARLQUIST. Yes.

Mr. ANDERSON. Do you remember whether that interfered with navigation or not?

Mr. CARLQUIST. It did not.

Mr. ANDERSON. Do you remember the citizens of Warroad complaining about the lowness of water interfering with navigation?

Mr. CARLQUIST. No; I do not remember that.

Mr. ANDERSON. You took no part in making any complaint?

Mr. CARLQUIST. If there was any holler here I might have taken part in it. I do know that there was one year that the lake washed in and filled up the channel down there, so we made request that the dredge reopen it.

Mr. ANDERSON. Was that the year of the low water?

Mr. CARLQUIST. Yes; it was the year of the low water.

Mr. ANDERSON. That is your explanation of the request or the complaint made by the citizens of Warroad, is it? Or do you know anything about the complaint that was made to Washington about the low stage of water?

Mr. CARLQUIST. I do not know anything about that.

Mr. ANDERSON. You spoke about market values in this locality. What did you mean by market values?

Mr. CARLQUIST. I do not know that I spoke about any market values.

Mr. ANDERSON. You said in answer to some questions by Mr. Steenerson that the market value of land was a certain price. Did you mean that?

Mr. CARLQUIST. I mean anything I say.

Mr. ANDERSON. Then did you say anything about market values?

Mr. CARLQUIST. I do not know how I expressed it. If you could call my attention to the particular thing I said I could tell you.

Mr. TAWNEY. I do not think it is material, Mr. Anderson, is it? The commission understands what he meant by market value if he used that term.

Mr. CARLQUIST. If I used that term, I meant what it possibly could be sold for.

Mr. ANDERSON. Take your homestead and lands in that vicinity, what can they be sold for at the present time without any buildings on them?

Mr. CARLQUIST. The land without any buildings on would be wild land.

Mr. ANDERSON. Yes; but what could that be sold for?

Mr. CARLQUIST. From fifteen to thirty dollars an acre.

Mr. ANDERSON. You think it could be sold for that?

Mr. CARLQUIST. I do; yes, sir.

Mr. ANDERSON. How does the price of this land down near the lake shore compare with the prices of land farther back that is not affected by the lake at all?

Mr. CARLQUIST. The land close to the lake that is not affected by the water is the highest priced land around here.

Mr. ANDERSON. I am speaking of the land that is affected.

Mr. CARLQUIST. Farther back it would command a less price than it would nearby.

Mr. ANDERSON. You mean farther back from the lake?

Mr. CARLQUIST. Yes.

Mr. ANDERSON. Why is that?

Mr. CARLQUIST. Well, it isn't as good land.

Mr. ANDERSON. Where is America post office?

Mr. CARLQUIST. It is 14 miles south of Warroad.

Mr. ANDERSON. Is it near the lake?

Mr. CARLQUIST. No.

Mr. ANDERSON. Is it away from the lake?

Mr. CARLQUIST. Yes.

Mr. ANDERSON. Would you recognize this land? Do you know J. H. Backer's land?

Mr. CARLQUIST. No.

Mr. ANDERSON. You do not know that land at all?

Mr. CARLQUIST. No; I do not know him.

Mr. ANDERSON. I have here a newspaper published in Warroad, the Warroad Pioneer. In the issue of Thursday, August 15, 1915, I see this notice:

LAND FOR SALE.—One quarter section, 9 miles south of Warroad, good roads, 100 acres of good tillable land, 60 acres of meadow, 5 acres under cultivation, small frame house and barn, \$12.50 per acre. Will accept horse as part payment, balance easy terms, 6 per cent interest. J. H. Backer, America P. O.

Would you recognize that locality?

Mr. CARLQUIST. No; I have not been out to America, but I do know that the country is very poor, and it might possibly be that it is there.

Mr. ANDERSON. That is a suggestion, but you do not know?

Mr. CARLQUIST. No; I do not.

Mr. ANDERSON. At any rate the man out there was willing to sell his land apparently at \$12.50 an acre.

Mr. CARLQUIST. Possibly he was. I know there is land there that is not worth \$12.50 an acre.

Mr. ANDERSON. You do not know this particular land?

Mr. CARLQUIST. No; I do not.

Mr. ROCKWOOD. Would you be kind enough to give the facts with reference to such sales of wild lands as you know about near the lake shore?

Mr. CARLQUIST. There have not been very many lands changing hands here lately that I know of.

Mr. ROCKWOOD. Do you know of any?

Mr. CARLQUIST. No; I do not know of any in the vicinity here.

Mr. ROCKWOOD. Do you know of any sales of wild land near the lake shore at any higher price than you testified to to-day? I mean actual sales.

Mr. CARLQUIST. I understand what you mean. In recent years I do not know that any has been sold—that is, east of Warroad along the lake shore—not within the last four or five years.

Mr. ROCKWOOD. Do you know of a sale by a man named Nye?

Mr. CARLQUIST. Yes.

Mr. ROCKWOOD. Where was his land?

Mr. CARLQUIST. It was a mile and a half south of Warroad.
Mr. ROCKWOOD. Do you know the price?
Mr. CARLQUIST. I was told it was \$4,200.
Mr. ROCKWOOD. Was that vacant land or improved land?
Mr. CARLQUIST. It was improved land.
Mr. ROCKWOOD. I am referring to vacant land.
Mr. CARLQUIST. No; it was not vacant land.
Mr. STEENERSON. Was a part of that land flooded?
Mr. CARLQUIST. Most of it was flooded.

TESTIMONY OF THOMAS L. JONES, OF WARROAD, MINN.

(Thomas L. Jones, being duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. JONES. In Warroad.

Mr. STEENERSON. How long have you lived here?

Mr. JONES. I have lived here 18 years.

Mr. STEENERSON. What is your business?

Mr. JONES. I was postmaster 17 years. I am now in the insurance and loaning business.

Mr. STEENERSON. Do you occupy any official position? Are you a member of the school board?

Mr. JONES. I am a member of the school board; yes, sir.

Mr. STEENERSON. How long have you been a member of the school board?

Mr. JONES. I think about 10 years.

Mr. STEENERSON. Have you got some land or city real estate?

Mr. JONES. Yes, sir.

Mr. STEENERSON. What is it?

Mr. JONES. I have my homestead that adjoins the town site.

Mr. STEENERSON. How many acres have you?

Mr. JONES. It was 162 acres originally.

Mr. STEENERSON. You took it as a homestead before the town started and you proved it up?

Mr. JONES. Yes, sir.

Mr. STEENERSON. You sold a part of that, did you?

Mr. JONES. Yes. I have a half interest in it at the present time, and we platted 20 acres.

Mr. STEENERSON. Is a part of that sold?

Mr. JONES. Practically all of it; yes, sir.

Mr. STEENERSON. Is your residence on this land?

Mr. JONES. No, sir.

Mr. STEENERSON. Where is your residence?

Mr. JONES. I live in this block, block No. 4.

Mr. STEENERSON. Well, this land that you have here, 20 acres of which have been platted and most of it sold, is located in what way with reference to the lake?

Mr. JONES. It is on the lake shore.

Mr. STEENERSON. Can you give the Government description?

Mr. JONES. It is in section 28, lots 2, 3, and 4; in the southwest quarter of the northwest quarter of the northwest quarter of the southwest quarter; township 16,, range 36.

Mr. MIGNAULT. That is in the town of Warroad?

Mr. JONES. Yes, sir; that is a half mile lake shore and a half mile river.

Mr. MIGNAULT. You are on one of the streets of Warroad?

Mr. JONES. Yes, sir; that is right on the point there of the lake and river.

Mr. STEENERSON. How was the lake when you first came here as to level?

Mr. JONES. I do not remember much about that. The lake seemed to vary in different years.

Mr. STEENERSON. Do you remember anything about whether there were sand beaches around here or not?

Mr. JONES. Yes, sir.

Mr. STEENERSON. Were there any?

Mr. JONES. Yes, sir; we had a sand island out here about a mile and a half. I judge it would cover about 20 acres. It had buildings and trees on it when I came here.

Mr. POWELL. Where did that lie?

Mr. JONES. I should judge about a mile and a half north.

Mr. STEENERSON. That was out in the lake?

Mr. JONES. Yes, sir.

Mr. STEENERSON. Were there trees on it?

Mr. JONES. Yes, sir.

Mr. STEENERSON. How big were the trees?

Mr. JONES. I should judge small oak trees, about 25 or 30 feet high.

Mr. STEENERSON. Do you know how large they were in diameter?

Mr. JONES. About 6 or 8 inches.

Mr. STEENERSON. What has become of that island?

Mr. JONES. It has disappeared. It has been washed away.

Mr. STEENERSON. When was the last part of it washed away?

Mr. JONES. I do not remember exactly. I think that island disappeared in about 1901. It was about a mile north from the town, a little northeast. If you have one of those town plats here, I will show you exactly where it was.

Mr. STEENERSON. I would state to the commissioners that I have examined in a very limited way United States Government survey plats, and in many particulars they do not agree with these plats here as to markings that would indicate the former levels; but I was going to suggest that the commission might obtain from the Interior Department the Government surveys, which are now 25 years old, giving the shore lines as they were.

Mr. POWELL. That is one of the first things we did.

Mr. STEENERSON. In very many particulars these lines here, which are supposed to indicate the original lake shore, do not correspond.

Mr. WHITE. The shore line on the township plats of the surveys made by the United States Federal Government represents what was ascertained to be a shore line at the time that the surveys were made. The line shown on the map constituting the results of the surveys of the International Joint Commission, and represented on the maps by dark blue lines, shows what was the shore line at the time that the surveys were made by the International Joint Commission's engineers.

Mr. STEENERSON. Do I understand that that is supposed to be identical with the shore line marked on the Government surveys?

Mr. WHITE. No; on the contrary, it is known not to be.

Mr. STEENERSON. There is nothing on these sheets that we have been using here to indicate what the identical shore line as marked on the Government survey was.

Mr. WHITE. No, sir.

Mr. STEENERSON. But that is shown on this atlas book?

Mr. WHITE. Yes, sir.

Mr. MIGNAULT. Mr. White, you state that the lines of the Government survey are shown on one of the books of plans which is now on the table?

Mr. WHITE. Yes, sir.

(The portfolio of plans referred to by Mr. Mignault was put in evidence and marked "Exhibit B," and the book of plans also put in and marked "Exhibit C.")

Mr. ROCKWOOD. Mr. White, do you know whether or not the United States Government survey lines are accurate with respect to meander lines or shore lines?

Mr. WHITE. We have found some variations. On the whole, I would say the meander lines as shown on the Government survey plats corresponded approximately. I would like to add this, that anyone who is familiar with land surveys knows that discrepancies of one kind and another are found in, one might say, even in surveys that are regarded as being of a high standard.

Mr. ROCKWOOD. But those Government surveys are not of a high character in that respect, are they?

Mr. WHITE. In some places we found quite marked variations.

Mr. STEENERSON. Mr. White, can you state whether or not those Government maps or plats showing these meander lines are before the commission? Are they a part of the records here? I mean the copies of the Government plats.

Mr. WHITE. No, sir; there has not been a set of those filed with the commission.

Mr. STEENERSON. Have you the copies in your possession?

Mr. WHITE. Yes; we have them.

Mr. STEENERSON. Are they certified by the Interior Department?

Mr. WHITE. Yes; all those in our office, I understand from Mr. Meyer, who furnished them, are certified copies.

Mr. STEENERSON. I assume, Mr. Chairman, that they will be required to be filed so that it can be ascertained whether or not the meander lines marked on Exhibit B coincide with the copies certified by the Interior Department.

Mr. WHITE. Certified copies of those plans have been on file for nearly two years in the offices of the commission, both at Washington and at Ottawa.

Mr. STEENERSON. So that they are accessible and we can examine the meander lines on this Exhibit B to see whether they are correctly represented.

Mr. WHITE. That is correct.

Mr. STEENERSON. Mr. Jones, when did you observe the rise in the lake level?

Mr. JONES. When I first came here. It seemed to me some years the lake was high and some years it was low.

Mr. STEENERSON. When did it affect your land here, your home-
stead, or has it affected it at all?

Mr. JONES. Yes. I could not say exactly when, but a few years ago.

Mr. STEENERSON. Did it flood it or wash it out?

Mr. JONES. It has flooded it.

Mr. STEENERSON. How much of it has been flooded of late years?

Mr. JONES. I should judge about 75 acres.

Mr. STEENERSON. How deep a flooding was it? Describe it.

Mr. JONES. It was from a few inches to 2 or 3 feet, I should think.

Mr. STEENERSON. Has that land been used for anything?

Mr. JONES. We used it for cutting hay.

Mr. STEENERSON. Did this flooding affect it for that purpose?

Mr. JONES. It spoiled it for that purpose.

Mr. STEENERSON. Now, how is it with regard to this part of your
land that is next to the 20 acres that you platted? Is that the same
character as the platted part?

Mr. JONES. Do you mean the same kind of land?

Mr. STEENERSON. Yes; the same elevation. What is it suitable
for?

Mr. JONES. It would be suitable for platting purposes, part of it.

Mr. STEENERSON. How much?

Mr. JONES. I should judge probably 40 acres.

Mr. STEENERSON. How has it been affected by the high level of
recent years with regard to the banks?

Mr. JONES. The land has been flooded.

Mr. STEENERSON. Has there or not been any washing away?

Mr. JONES. Yes.

Mr. STEENERSON. Can you describe what has taken place there?

Mr. JONES. The bank has been washed away all along the river.

Mr. STEENERSON. To what extent?

Mr. JONES. I should judge, probably, since I filed on that land——

Mr. STEENERSON. Not since you filed on it, but during the last few
years.

Mr. JONES. I should judge about 10 feet.

Mr. STEENERSON. Is it caving in now?

Mr. JONES. It is caving in every day; yes, sir.

Mr. STEENERSON. Have you observed whether the lake has been
higher in late years than it was formerly?

Mr. JONES. Yes, sir.

Mr. STEENERSON. Is this caving in more active now than it was
when the lake was lower?

Mr. JONES. Yes, sir.

Mr. STEENERSON. How much above the lake is it now?

Mr. JONES. The land?

Mr. STEENERSON. Yes; this part of the land which you say would
be suitable for platting.

Mr. JONES. I should judge it is about 2 feet.

Mr. STEENERSON. Two feet additional rise in the lake level would
submerge it entirely?

Mr. JONES. Yes, sir; everything.

Mr. STEENERSON. If the lake were kept at a lower level than it is
now, would it be suitable for town-site purposes?

Mr. JONES. Yes, sir.

Mr. STEENERSON. In that case what would you say would be its value?

Mr. JONES. I would say about \$400 an acre at least.

Mr. STEENERSON. If the lake should be higher than it is now, would it be worth more or less?

Mr. JONES. It would be of no value.

Mr. STEENERSON. This present level has already affected this land, has it?

Mr. JONES. Yes, sir.

Mr. STEENERSON. Do you know about at what rate of progress this caving-in goes on?

Mr. JONES. No; I couldn't say.

Mr. STEENERSON. How is it with the cellars there in that neighborhood; were they affected by the rise of the lake?

Mr. JONES. Yes.

Mr. STEENERSON. In what way?

Mr. JONES. With the lake at the height it is there is no drainage to be had and practically no cellars to be had in that part of the town.

Mr. STEENERSON. Is there water in them?

Mr. JONES. Water runs in them; yes, sir.

Mr. STEENERSON. It seeps in?

Mr. JONES. It seeps in; yes, sir. The ground is saturated with water; it is full of water.

Mr. STEENERSON. What is the value of this other part of your land that has been used for agricultural purposes, assuming that the lake is low enough so that it can be used?

Mr. JONES. I should say it would be worth \$150 an acre.

Mr. STEENERSON. What is it worth with the water as high as it was last June?

Mr. JONES. It is not worth anything.

Mr. STEENERSON. How many acres are there in that portion of land?

Mr. JONES. There are about 75 acres, I should judge, that are flooded.

Mr. STEENERSON. Flooded at the present time?

Mr. JONES. Yes, sir.

Mr. STEENERSON. Now, with reference to the schoolhouse, do you know what that cost and when it was built?

Mr. JONES. We started to build it in 1912, I think. It cost about \$25,000.

Mr. STEENERSON. Has the lake level affected that any?

Mr. JONES. Yes, sir.

Mr. STEENERSON. When?

Mr. JONES. Ever since that has been built. The following spring the water started to seep in.

Mr. STEENERSON. Is there more of it now or less?

Mr. JONES. It seems to be about the same.

Mr. STEENERSON. Did that do any damage?

Mr. JONES. Yes; it has damaged the basement.

Mr. TAWNEY. Is this the same schoolhouse that was previously spoken of?

Mr. JONES. Yes, sir; it is the same.

Mr. STEENERSON. There is no controversy about it. We are merely going over the same ground. I believe that is all. You may take the witness.

Mr. GLENN. You said you have been here 18 years.

Mr. JONES. Yes, sir.

Mr. GLENN. In some years the lake was high and in some years it was low during that time?

Mr. JONES. Yes, sir.

Mr. GLENN. In what years was it low and in what years was it high?

Mr. JONES. I do not remember.

Mr. GLENN. Would it just vary?

Mr. JONES. It varied a great deal in some years.

Mr. GLENN. Some years it was high and some years it was low. That has been going on for 18 years?

Mr. JONES. There was more fluctuation several years ago than at the present time.

Mr. GLENN. Have you kept gauge records to show exactly how it was during those years?

Mr. JONES. I read the first water gauge that was located here.

Mr. GLENN. What was that?

Mr. JONES. That was the one that was put in by the engineer officers at St. Paul.

Mr. GLENN. I mean how high was that?

Mr. JONES. I could not say. That was about 17 years ago.

Mr. STEENERSON. Mr. Jones, I do not know that I understand that. Do you mean to say that many years ago it went higher and lower, so that your land or homestead was flooded at that time as much as it is now?

Mr. JONES. If I remember rightly, there was one year—I can not say just when—that it was flooded.

Mr. STEENERSON. Only one year?

Mr. JONES. Just one year. Then the water receded, and the lake during the last few years has been coming back.

Mr. STEENERSON. There might be a very great variation in the higher and lower levels and the highest level not be the same as last spring.

Mr. JONES. What I meant was that the lake has not been at any certain level in any year that I have been here. Sometimes it has been high and sometimes low.

Mr. STEENERSON. You have not made any business of studying the lake?

Mr. JONES. Not at all.

Mr. STEENERSON. Such men as Paul Marschalk who have to do with navigation would know more about it than you?

Mr. JONES. Yes, sir.

Mr. MAGRATH. Mr. Jones, did I understand you to say that the surface of your land is about 2 feet above the water level to-day?

Mr. JONES. I think so.

Mr. MAGRATH. You say that it affects your cellars at the present time?

Mr. JONES. Yes, sir.

Mr. MAGRATH. How much lower would it be necessary to reduce that water level in order not to be injurious to your cellars?

Mr. JONES. I should think about 6 or 8 feet.

Mr. MAGRATH. Do you know that it would not be possible under natural conditions to keep it at that level?

Mr. JONES. Does anyone know the natural level of the lake?

Mr. MAGRATH. We have it worked out here pretty thoroughly for the last 21 years.

Mr. ROCKWOOD. Mr. Jones, you have been referred to as an authority as to the nature of the transaction by which Albert Bird disposed of his land. Was that a cash sale or a trade?

Mr. JONES. That was a trade.

Mr. ROCKWOOD. Now, I accept your apology, Mr. Steenerson.

Mr. STEENERSON. At what price was it sold? Tell us about the price of that land.

Mr. ROCKWOOD. I object to that as immaterial.

Mr. JONES. He got \$50 an acre for it.

Mr. STEENERSON. That is located 4 miles from town?

Mr. JONES. Yes, sir.

Mr. STEENERSON. The inference from the question is that, being a trade, it was not really sold at that price. Did he give property worth \$16,000 or more in that trade?

Mr. JONES. I think he got \$100 an acre for his land. He got property worth \$75,000. I figure that he got \$100 an acre for the land from the property that he got in St. Paul. He got a mansion.

Mr. WYVELL. Mr. Jones, do you know enough about the conditions of farms in the vicinity of the lake to say whether or not farms have a market value here? Have there been enough sales so that a market value could be assumed to have been established?

Mr. JONES. I think so. Of course, there have not been so many sales made.

Mr. WYVELL. Are you familiar, then, with what the market value of farm lands would be in the vicinity of the lake?

Mr. JONES. I think so.

Mr. WYVELL. What, in your judgment, are farm lands in the vicinity of the lake worth which are affected by the rise and fall of the lake?

Mr. JONES. Do you mean improved farms?

Mr. WYVELL. We will assume that the farm consists of 160 acres and has good buildings upon it.

Mr. JONES. \$100 an acre.

Mr. POWELL. For buildings and land improved?

Mr. JONES. Yes, sir.

Mr. MAGRATH. That is, assuming that it is under cultivation?

Mr. JONES. Not necessarily.

Mr. MAGRATH. Assuming what portion of it to be under cultivation?

Mr. JONES. I should say if they had good buildings and one-third or one-half under cultivation.

Mr. TAWNEY. Mr. Jones, is it not a fact that farm land in Roseau County generally is just as productive as farm land on the south shore of the lake?

Mr. JONES. I do not know about that. The land in this part of the county is considered the best land in the county.

Mr. TAWNEY. How far from the lake?

Mr. JONES. Anywhere where they get the benefit of the lake conditions, the moisture and the formation caused by the lake.

Mr. TAWNEY. How far is it from here to Roseau?

Mr. JONES. Twenty-two miles.

Mr. TAWNEY. Are you acquainted with the value of lands around Roseau?

Mr. JONES. No, sir.

Mr. TAWNEY. How far back from the lake is the land equally productive to this along the shore?

Mr. JONES. Anywhere within 5 or 10 miles of the lake.

Mr. TAWNEY. Are you acquainted with the value of land 5 or 10 miles back from the lake?

Mr. JONES. Yes, sir.

Mr. TAWNEY. What is the market value of that land?

Mr. JONES. That depends upon the improvements on the land. That land is worth from \$20 to \$75 an acre.

Mr. WYVELL. Assuming that you had 160 acres of land with no buildings on it, equally good land to a farm upon which there were buildings, what would that be worth, nearly all of it being either under plow, or so that hay could be cut on it?

Mr. JONES. It would be worth from \$50 to \$60 an acre.

Mr. POWELL. You were asked in respect to the value of lands along the lake. Within what range of territory were you speaking when you gave the value in answer to that question? Did you mean all along the lake or a certain portion of the lake front?

Mr. JONES. I think all along the lake where the land is under cultivation.

Mr. POWELL. How far along the shores of the lake would that be that you had in mind when you made that answer?

Mr. JONES. All around the shores of the lake.

Mr. POWELL. Do you know the market value all around the shores of the lake?

Mr. JONES. No.

Mr. POWELL. How far would your familiarity with values along the shores of the lake extend?

Mr. JONES. As far as Zippel. I am familiar with the land as far as Zippel.

Mr. POWELL. How far north?

Mr. JONES. To the boundry line.

Mr. POWELL. How far would that be?

Mr. JONES. About 7 miles.

Mr. POWELL. Then your familiarity with the values along the lake front extends over a territory of about 17 or 20 miles?

Mr. JONES. It is further than that. It is about 35 miles to Zippel.

Mr. POWELL. And 7 miles the other way; that would be 42 miles.

Mr. JONES. Yes, sir.

Mr. ANDERSON. Mr. Jones, in answer to Mr. Wyvell's question you put the market value of the lands along the lake affected by the rise and fall of the lake at \$100 an acre. You meant that, did you?

Mr. JONES. Yes, sir.

Mr. ANDERSON. How do you fix that value?

Mr. JONES. By the production of the land when it is put under cultivation.

Mr. ANDERSON. It that the way you fix market value of land?

Mr. JONES. By the productive value; yes, sir.

Mr. ANDERSON. You do not fix it by the selling value?

Mr. JONES. No, sir.

Mr. ROCKWOOD. Mr. Jones, what is the best price at which you have known wild farm land to sell for cash?

Mr. JONES. \$40 an acre.

Mr. ROCKWOOD. Where was that?

Mr. JONES. About 3 miles from town.

Mr. ROCKWOOD. What is the description of the land?

Mr. JONES. I could not give that. That is some land that is located out near Mr. Bird's.

Mr. ROCKWOOD. Who made the sale?

Mr. JONES. Mr. Pratty's land is the land in question. I think the sale was made through the Security Bank here.

Mr. ROCKWOOD. That was land entirely unimproved, was it?

Mr. JONES. The land, as I understand it, had no buildings on it. It might have had some cultivation.

Mr. ROCKWOOD. Now, take wild land, unimproved land—what is the best price at which you have known it to be sold?

Mr. JONES. With no improvements whatever?

Mr. ROCKWOOD. Yes.

Mr. JONES. Practically all the land that has been sold around here has had some improvement on it. It has all been homestead land. I do not know of any absolutely wild lands; that is, I can not place any at the present time that have been transferred.

Mr. POWELL. Are there not public sales and public lands advertised?

Mr. JONES. State lands; yes, sir.

Mr. POWELL. What is the price they generally bring in competition at those sales?

Mr. JONES. They bring from \$7 to \$20 an acre.

Mr. POWELL. That is wild land?

Mr. JONES. That is swamp land.

Mr. STEENERSON. That is all entirely outside of what we call the ceded Indian land?

Mr. JONES. Yes, sir.

Mr. POWELL. That would be hard land, would it not?

Mr. JONES. No; it would be soft; mostly considered to be low land—land that is under these drainage projects.

Mr. ROCKWOOD. Is \$40 an acre the best price that you have known land to sell for as a cash transaction—land without buildings on it?

Mr. JONES. Yes, sir.

Mr. MARSCHALK. Mr. Jones, do you remember the sale that Mr. J. W. Person made several years ago to the Cemetery Association—5 acres, I believe it was? Do you remember the price that he received for that land?

Mr. JONES. He got \$100 an acre for that. That was only a small plat.

Mr. POWELL. That would not fix market value of farm land.

Mr. GARDNER. Mr. Jones, is it not true that there has been no standard of values fixed upon these lands simply because there is so much unoccupied land here and everybody that has come in here and obtained land has obtained title to public lands in some form?

There has not been a great amount of land sold back and forth between individuals?

Mr. JONES. There has not been any standard of values.

Mr. GARDNER. There has not been any occasion to buy land that was occupied by others?

Mr. JONES. No, sir.

Mr. WYVELL. I want to clear up absolutely that sale or trade they talk about. Mr. Bird traded his farm for property in St. Paul, did he?

Mr. JONES. Yes, sir.

Mr. WYVELL. Do you know what he estimated his farm as being worth in that trade?

Mr. JONES. \$16,000.

Mr. WYVELL. That is how much an acre?

Mr. JONES. That is \$50 an acre.

TESTIMONY OF E. M. HEINBECK, OF WARROAD, MINN.

(E. M. Heinbeck, being first duly sworn, testified as follows:)

Mr. STEENERSON. Do you live here in Warroad, Mr. Heinbeck?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. How long have you lived here?

Mr. HEINBECK. Four years.

Mr. STEENERSON. What is your official position, if you hold any?

Mr. HEINBECK. Village clerk of Warroad.

Mr. STEENERSON. How long have you been village clerk?

Mr. HEINBECK. Four years.

Mr. STEENERSON. Have you looked up the assessed valuation of real estate and personal property?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. Have you computed it or have you got it in figures?

Mr. HEINBECK. I took it from the statement sent me by the county auditor.

Mr. STEENERSON. Have we got the figures?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. You may give them.

Mr. HEINBECK. Taxable valuation for 1914, as submitted by the county auditor in February, 1915, was given as \$228,030.

Mr. STEENERSON. Is that real and personal property or only real property?

Mr. HEINBECK. That is real and personal for purposes of taxation.

Mr. STEENERSON. Do you know the school attendance here? Have you looked that up?

Mr. HEINBECK. Yes, sir; the enrollment for 1913 was 252; for 1914, 273; and for 1915—which is yesterday, gentlemen—300, of which 33 are in the high school. We have a high school commencing with yesterday.

Mr. STEENERSON. Is this a village or a city?

Mr. HEINBECK. This is a village.

Mr. STEENERSON. Have you any village property—works of any kind?

Mr. HEINBECK. Yes, sir; we have the municipal light plant and waterworks and a sewerage system around this block No. 4.

Mr. STEENERSON. What does that electric plant supply?

Mr. HEINBECK. It supplies the village with power and lighting facilities.

Mr. STEENERSON. It furnishes private consumers with electric light?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. And also furnishes power and light for the city?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. Do you know approximately what it cost?

Mr. HEINBECK. It cost approximately \$35,000.

Mr. STEENERSON. When was the sewerage system constructed?

Mr. HEINBECK. The present sewerage system was installed last winter to supplement one that we had previously which was not working.

Mr. STEENERSON. Why was it not working? Did the lake level have anything to do with that?

Mr. HEINBECK. It was frozen up in the wintertime by the water backing up and cracking the piling.

Mr. STEENERSON. When did that happen?

Mr. HEINBECK. I could not say, but it was inoperative when I came here; that is, to some extent.

Mr. STEENERSON. Then you installed this new one?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. Does that empty into the lake?

Mr. HEINBECK. It ultimately empties into the river. It runs into a septic tank.

Mr. STEENERSON. Then what is done?

Mr. HEINBECK. After it has gone through a process of cleansing, as I understand it, it goes into the river.

Mr. STEENERSON. Does it flow into the river or is it pumped in?

Mr. HEINBECK. It is pumped in by what is known as the siphon system, an automatic siphon.

Mr. STEENERSON. Does the power for that pumping come from the electric light plant?

Mr. HEINBECK. Yes, sir.

Mr. GLENN. What is the object of this testimony? I do not want to cut you off in any way, but what light will this throw upon this investigation?

Mr. STEENERSON. It seems to me that it throws a good deal of light upon it.

Mr. GLENN. I want to get into my mind what you are driving at.

Mr. STEENERSON. I did not suppose it was necessary. I may be obtuse and not understand, but the object of this investigation, as I understand it, is to determine the proper level. You might recommend a level that would destroy the whole city of Warroad. These people have their homes here; they are their castles and they love them. If they should be drowned out it would be a very serious matter. This is to give the Governments and the commission an idea of what the consequences would be.

Mr. TAWNEY. I think it is material to inquire as to the effect of the present level upon the operation of any sewerage system at least.

Mr. STEENERSON. I think that upon reconsideration you will see that this is a part of the case. Mr. Heinbeck, you say the sewage

is pumped into the river by electric power from the electric light plant?

Mr. HEINBECK. Let me explain it. When we put this sewerage system in we were up against the proposition of getting down below the frost line, in the first place, and in doing that we would get down where we would have to put in steel pipes in order to keep from getting the surface water into the pipes, because we could not afford to pump through this automatic siphon all of the surface water from the city. We were confining it only to the sewage and to the water from the basement and the refuse of the buildings around this block. In order to do that we had to get down below the level of the water. Then in order to get it up into a septic tank so as to be able to drain the overflow into the river we had to go down a considerable depth with that septic tank, in order to get the drop. I think it was some 27 feet, although I would not state that as being correct. Then we had to raise it by this siphon system from our water tank so that it would flow into the river after it had gone into the septic tank.

Mr. STEENERSON. Owing to the fact that the surface of the water is higher than the sewage this pumping is necessary? You have to elevate it first before it will run into the river?

Mr. HEINBECK. Yes, sir.

Mr. STEENERSON. The higher the level of the lake and river the higher it will have to be pumped?

Mr. HEINBECK. I presume so.

Mr. STEENERSON. What other city institutions or plants have you besides the electric-light plant and sewerage system?

Mr. HEINBECK. That is all we have.

Mr. STEENERSON. Do you know anything about this flooding of the schoolhouse?

Mr. HEINBECK. No; I do not.

Mr. TAWNEY. What is the bonded indebtedness of this village?

Mr. HEINBECK. Offhand, I think it is \$37,500.

Mr. POWELL. I do not quite understand this system you have here. You say that the sewage runs first into a tank. Is it pumped from there to a higher level?

Mr. HEINBECK. I have plans of it here. I am not engineer enough to explain it to you.

Mr. POWELL (after examining the plan). I see it is pumped up by a jet arrangement.

Mr. HEINBECK. Of course, we have to pump water up into the tank.

Mr. POWELL. It is just an injector, with water instead of steam. The automatic arrangement would never deliver it.

Mr. ROCKWOOD. Of the assessment how much was realty and how much was personal, Mr. Heinbeck?

Mr. HEINBECK. I can not state that.

Mr. TAWNEY. That was given by the other member of the school board, Mr. Carlquist.

Mr. ROCKWOOD. Mr. Heinbeck, do you know what the assessment was for 1912?

Mr. HEINBECK. No, sir.

Mr. ROCKWOOD. You do not know how much it has increased?

Mr. HEINBECK. No; I could not say.

TESTIMONY OF DR. LAWRENCE PARKER.

(Dr. Lawrence Parker, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Dr. PARKER. Warroad.

Mr. STEENERSON. You are a physician?

Dr. PARKER. Yes.

Mr. STEENERSON. Did you have anything to do with the health services of Warroad?

Dr. PARKER. Yes; I had. I was health officer for the township and the village of Warroad most of the time, practically all the time, since 1903, January 1.

Mr. STEENERSON. How long have you lived here?

Dr. PARKER. Nineteen years, over.

Mr. STEENERSON. Have you had occasion to observe the higher levels of the lake of late years over what it was formerly?

Dr. PARKER. Yes.

Mr. STEENERSON. Have you observed the sand beaches around the lake in the early days?

Dr. PARKER. Yes.

Mr. TAWNEY. Would it not be better to let him describe in his own way the conditions?

Mr. STEENERSON. I would try to bring him to the point. If you prefer, you can ask questions.

Mr. TAWNEY. Dr. Parker can go on and describe the conditions. He has observed them in the 19 years.

Mr. STEENERSON. I was not going to pursue that. I was going into the health conditions. You say you observed the conditions here when the lake was lower?

Dr. PARKER. Yes.

Mr. STEENERSON. And you have observed them during your term of service of 10 years until recently in the official capacity of health officer?

Dr. PARKER. Yes.

Mr. STEENERSON. You may go on and tell the commission—I will not bother with questions—what the effect has been.

Dr. PARKER. As regards the sanitary condition of the water?

Mr. STEENERSON. Yes; the backing up of the water, and the resulting conditions, if any.

Dr. PARKER. I can explain it in this way: I have a farm about a mile up the river—my old homestead—that I took 19 years ago, came in here when the Indians were here, before the land was opened up for settlement; I squatted there with my family, though I was here a good deal of the time, practicing in Roseau County, and going backward and forward to the little village—there used to be a sort of trading point here in the early days—and I had occasion, in going backward and forward, of rowing a boat, and my family lived up on the farm most of the time, anyways, seven or eight months of the year, and we used to notice there that there was always a current in that river. The river was devoid of weeds; we used to drink the water; I drank it myself and my family, and the conditions that have obtained for the last five years, what it is getting to-day, each year

is getting worse and worse; the water is backed up and there is no current in the river; it is nothing but an old stagnant pond, breathing protoplasm germs of all descriptions; it is taken up also by the cattle drinking this water, and since I practiced here 20 years in this county, why, for 10 years I never had a single case of typhoid fever in Roseau County. That is 10 years ago. The last 10 years, why, it is coming along lovely. I have been also engaged by the Red Cross, after the fire at Baudette and Spooner, and had occasion to go down there to attend to typhoid fever cases for the Red Cross, and I had reason to have to make out my reports where the source of the infection of the typhus originated, and there are many cases that they have down there, the number is each year increasing more and more in the Rainy River and Baudette, especially the last seven or eight years, it has been coming right on; the mortality is pretty bad, and we are just beginning to get it here. It is just coming along lovely; makes good work for the doctors; that is all there is to it. But there is another thing I don't like; that is on account of the cholera morbus with the little children who are passing off in large numbers, quite a good many around Warroad and in the vicinity of Warroad, and it is bad thing to contend with.

Mr. STEENERSON. As to the source?

Dr. PARKER. I find it is from the source of the water. It is the decomposition of the vegetable matter, and it causes that ptomanic condition of germs to propagate in that water, where they will, and it seems as though it is from the lake coming up, and I have always been after them——

Mr. GLENN. Is the river water the drinking water here?

Dr. PARKER. It is not fit to drink.

Mr. GLENN. They do not drink that water?

Dr. PARKER. Not now, but a good many of them did, and the cattle and many of them are using it, and they will take it just the same. If you take the poisoned milk, you can not expect it will be good for the child. You can trace it right back from the milk. I detected the source of most of this cholera morbus we have here in the infants; it is from the source of the water, and they say the water to-day is getting simply fierce. It really stinks; there is no current; it lays there dead. I have gone back 4 miles or 5 miles up the river, and there is no current at all, where I used to have hard work to row a boat up against it. It made heavy work to row up to my farm from here.

Mr. STEENERSON. How is it down toward the lake? Is the water good there?

Dr. PARKER. Not anywhere in the harbor.

Mr. STEENERSON. You would have to go outside the harbor?

Dr. PARKER. Yes. Of course, when it is low, it is all right, but in the spring, when the vegetable matter comes down, it is bad.

Mr. STEENERSON. Did you say you traced the source of this typhoid fever?

Dr. PARKER. My reports of the source was on account of the water, and we invariably find all infection of typhoid is from the water.

Mr. STEENERSON. You said something about the low water?

Dr. PARKER. No; it makes no difference where it is; it may be taken from an old well, where it has laid stagnant; it is from water

that lays stagnant; it is not like flowing water. You take water in a lake that is green, it will have a current working over the pebbles and it will purify it.

Mr. STEENERSON. What would be the effect on the people living on the river and lake here, to have the level raised still higher?

Dr. PARKER. Well, it would make matters that much worse, because it keeps backing the water up; it has no drainage, and this stuff just simply rots and lays there, and will not have any flow off, and it will choke up and run into the wells; it will seep in at times. I have been quite a little ways from the lake and found it, and you will find it is not only in the lake, but in the wells; you will trace this dysentery and things of that kind from the water.

Mr. POWELL. When you made this examination, how many bacilli typhoidal appeared to the hundred cubic centimetres?

Dr. PARKER. Oh, I never made an examination of the water.

Mr. POWELL. That is the only way.

Dr. PARKER. I never made any tests of the water, but the source—we always have to get our idea of the source.

Mr. POWELL. But that is the only way you can determine?

Dr. PARKER. Oh, yes; but we don't have to do that.

Mr. POWELL. Then your statement was only speculation?

Dr. PARKER. No, not altogether speculation; because I have heard reports coming from Baudette——

Mr. POWELL. What number of bacteria in a hundred centimetres would you consider a noxious inoculation?

Dr. PARKER. That all depends; very few; it all depends on what condition the germ had to propagate with.

Mr. POWELL. Are you prepared to state that there were any *b. coli* at all in this water you examined?

Dr. PARKER. I am under the impression that there was.

Mr. POWELL. It is only an impression?

Dr. PARKER. Only an impression, because I had no other source where that typhoid originated.

Mr. POWELL. Did you take out any samples of the water and subject it to tests?

Dr. PARKER. No.

Mr. POWELL. Nor to cultures?

Dr. PARKER. No.

Mr. POWELL. Nor to microscopic examinations?

Dr. PARKER. No.

Mr. POWELL. Nor to bacteriological count?

Dr. PARKER. No.

Mr. POWELL. Then what you did was very superficial?

Dr. PARKER. Well, I do not altogether think that. I do not think you will find a general practitioner does that.

Mr. POWELL. Do you think that it is so serious that we, who are charged with the work of sterilizing all international waters, should take the matter up and compel this section of the country to look after their sewage and not deposit it in international waters? Is it so serious as that?

Dr. PARKER. I should think they should have some way of having international drainage, if it could be done.

Mr. KEEFER. Taking the Rainy River, which flows into this lake, what towns are there on that lake draining into it?

Dr. PARKER. Baudette and Rainy River.

Mr. KEEFER. What size is Rainy River? Two or three thousand?

Dr. PARKER. I suppose so.

Mr. KEEFER. And Baudette?

Dr. PARKER. Similar.

Mr. KEEFER. And Emo?

Dr. PARKER. I am not acquainted with Emo.

Mr. KEEFER. About 1,500; and then there is Fort Frances?

Dr. PARKER. I do not know anything about that. I have never been up there to stay there.

Mr. KEEFER. And there is International Falls?

Dr. PARKER. I passed through there, but never stopped, and do not know anything about it.

Mr. KEEFER. All that sewage pours down that river, does it not?

Dr. PARKER. I do not know. I am not acquainted with the geographical condition of the Rainy River; it is out of my district.

Mr. KEEFER. You never considered whether there was any sewage pouring down there, the same as is down the Niagara River?

Dr. PARKER. I suppose there is, but I do not know. I have no proofs of that.

Mr. KEEFER. Would you consider that, as a scientific question, sewage pouring down there would have any effect on the water here?

Dr. PARKER. I do not think that would have nearly as much effect as from the decomposition of the vegetable matter.

Mr. KEEFER. Would it have any effect?

Dr. PARKER. Well, it is a matter—you might put a grain of morphine sulphate in about 10,000,000 gallons of water and you might find there was a little opium there.

Mr. KEEFER. Leaving the opium out, in addition to these towns, there is all the farming settlement along there draining into that river?

Dr. PARKER. Well, that is a question to decide. We could not decide that.

Mr. KEEFER. It is a fact, as you know, that there is a farming settlement which drains into that basin?

Dr. PARKER. I am not acquainted with that neighborhood.

Mr. TAWNEY. The doctor does not claim to have made any examination to determine the number of *b. coli* in the water for the purpose of determining the real source. I think the examination has gone as far as necessary, but I ought to call the doctor's attention to one fact, and that is that drainage is not alone necessary for the purification of water. There are other things.

Dr. PARKER. It is one of the essential parts of it. You can not expect healthy water without drainage.

Mr. TAWNEY. Take the Detroit River, where there is a very swift current. That river is polluted from one end to the other. It is almost raw sewage, and continues to be until it gets into Lake Erie, about 15 miles.

Dr. PARKER. Very likely passes through some soil—

Mr. TAWNEY. The drainage does not affect the purity of the water, and the Niagara Falls the same. The lower Niagara is grossly polluted from shore to shore.

Mr. POWELL. Thirty-eight thousand *bacillus coli* to the 100 centimeters.

TESTIMONY OF ALONZO WHEELER.

(Alonzo Wheeler, recalled, testified as follows:)

Mr. STEENERSON. You made a statement in your former examination that you had been a captain on the Lake of the Woods in the early days?

Mr. WHEELER. Yes.

Mr. STEENERSON. For how many days did you navigate the Lake of the Woods?

Mr. WHEELER. As captain I was two years—not two years, but two seasons.

Mr. STEENERSON. Did you have something to do with navigation after that?

Mr. WHEELER. Yes.

Mr. STEENERSON. In what way?

Mr. WHEELER. I have been acting as wheelsman and mate.

Mr. STEENERSON. What years were you captain?

Mr. WHEELER. In 1882 and 1883.

Mr. STEENERSON. And afterwards you were wheelsman?

Mr. WHEELER. Yes.

Mr. STEENERSON. And have been connected with navigation up to what time?

Mr. WHEELER. Well, more or less up until this season.

Mr. STEENERSON. Mr. Marschalk will ask the captain a few questions.

Mr. MARSCHALK. Prior to the so-called roller dam you served as deck hand, wheelsman, pilot, and captain?

Mr. WHEELER. Yes.

Mr. MARSCHALK. That was prior to what year?

Mr. WHEELER. In 1881 and 1882.

Mr. MARSCHALK. You remember the date of the construction of the dam, which is of record? You served in 1887 as wheelsman, pilot, and deck hand on different steamers?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Will you name the steamers?

Mr. WHEELER. The first one was the *Percy Sutherland*. I was on her two seasons. She was owned by the Rainy Lake Lumber Co.

Mr. MARSCHALK. What was the draft of the boat?

Mr. WHEELER. Six and a half feet.

Mr. MARSCHALK. And the other?

Mr. WHEELER. I was on her two seasons.

Mr. MARSCHALK. Any other boat you served on?

Mr. WHEELER. Yes; afterwards there was. Then, in 1884, I acted as mate on the steamer *Algoma*.

Mr. MARSCHALK. What was the draft of that boat?

Mr. WHEELER. Seven and a half feet.

Mr. MARSCHALK. Any other boat?

Mr. WHEELER. The next one I served on—I think I was on the *Queen*.

Mr. MARSCHALK. And the draft of the *Queen*?

Mr. WHEELER. Five feet.

Mr. MARSCHALK. Outside of that, do you remember what other boats navigated the Lake of the Woods and Rainy River in those days?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Please name them.

Mr. WHEELER. The steamer *Empress*.

Mr. MARSCHALK. The draft?

Mr. WHEELER. Eight feet and better; and there was the *D. L. Mather*.

Mr. MARSCHALK. And the draft of that?

Mr. WHEELER. Eight feet and a half and nine.

Mr. MARSCHALK. And the other boats?

Mr. WHEELER. The *Algona* and the *Mary Hatch*; the *Algona* 7½ feet and the *Mary Hatch* drew 7½ feet. There was the *Victoria*, 7½-foot draft boat; there was the *Koochiching*, 7-foot-draft boat and over, according as they ballast her; and the *Fleet Wing*.

Mr. MARSCHALK. And the *Thistle*?

Mr. WHEELER. The *Fleetwing* was a 6-foot-draft boat and the *Thistle* was 5½-foot draft.

Mr. MARSCHALK. Which of those boats were passenger steamers and which were tow steamers? Name the passenger steamers?

Mr. WHEELER. The *Thistle* and the *Fleetwing*.

Mr. MARSCHALK. And in later years there were passenger steamers which we have not mentioned?

Mr. WHEELER. In later years steamers came on after that; there was the *Hammond Maid*.

Mr. MARSCHALK. The draft?

Mr. WHEELER. She was a 7-foot-draft boat; and then there was quite a few of them; I can not remember them all.

Mr. MARSCHALK. What boat did Capt. Lewis sail?

Mr. WHEELER. The *Shamrock*.

Mr. MARSCHALK. The draft of that?

Mr. WHEELER. Six feet.

Mr. MARSCHALK. That was a passenger boat in the early days?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Prior to the construction of the roller dam?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Did those boats have any difficulty in entering Rainy River?

Mr. WHEELER. No.

Mr. MARSCHALK. Did you take any soundings in the outer part of the mouth of Rainy River, that part of Rainy River that faced the fishery into the lake? Properly speaking, this fishery is located in the Lake of the Woods at the present time?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Past the Sable Island?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Have you ever taken soundings there?

Mr. WHEELER. Yes; time and time again.

Mr. MARSCHALK. State the depth of that water. I mean prior to the construction of the roller dam. You may not remember the year, but you know the conditions prior to the construction of the roller dam.

Mr. WHEELER. These soundings were in 1882 and 1883. In 1882 and 1883 the water varied on the outside bar there, right straight along across—of course, the bar runs like this [indicating], and in

the center the shallowest place on that was 9 feet of water going across the outside bar; this is a mile and a half where that outside light is.

Mr. MARSCHALK. In connection with that, where is the outer buoy located at the present time—outside the lighthouse? Is it half a mile or a quarter of a mile from the entrance to the channel? Approximately, will do.

Mr. WHEELER. This year I was only out there once.

Mr. MARSCHALK. You know as well as I do where it used to be.

Mr. WHEELER. In the early days—

Mr. MARSCHALK. I mean of late years?

Mr. WHEELER. I will speak of late years. I know I have passed in and out. They used to be always about a mile from the lighthouse—very near; I should judge about a mile from the lighthouse the buoys would be.

Mr. MARSCHALK. Then, prior to the construction of the roller dam—

Mr. WHEELER. We had no buoys.

Mr. MARSCHALK. But the bar was away out?

Mr. WHEELER. It was a mile out.

Mr. MARSCHALK. It was half a mile farther out than the farthest buoy ever placed since they began to place buoys at the mouth of Rainy River?

Mr. WHEELER. Yes.

Mr. MARSCHALK. And you say that on this bar you had never less than 9 to 9½ feet of water?

Mr. WHEELER. Yes.

Mr. MARSCHALK. And the *D. L. Mather* had a draft of 8½ feet?

Mr. WHEELER. Yes.

Mr. MARSCHALK. From 1883 down to the present time you had no difficulty in entering or leaving the mouth of Rainy River under any weather conditions?

Mr. WHEELER. None at all.

Mr. MARSCHALK. No matter what conditions, they could leave and enter that shore?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Since the construction of the roller dam and subsequent to the construction of the so-called Norman Dam, have you been familiar with the conditions at the mouth of the Rainy River?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Do you know as to when the channel began to sand in there?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Will you please state the year?

Mr. WHEELER. I could not just exactly give you the year, but I know it was after the roller dam was put in. When the roller dam was put in there, the next season they could begin to notice the difference in these bars washing in.

Mr. MARSCHALK. Do you know of any dredging operations the Dominion Government has undertaken at the mouth of the Rainy River?

Mr. WHEELER. Yes.

Mr. MARSCHALK. Will you please state to the commission what they have done?

Mr. WHEELER. I think they have been dredging there now about four years; I think it is about four years since they started to dredge there.

Mr. MARSCHALK. What did they dredge there?

Mr. WHEELER. They have not been dredging on the main channel. Only just in one place, where the original channel ran, they have been dredging, and the *Warroad* dredge, I believe, was there; I saw her from a distance, but was not looking where she was working. I believe she was working in there for one fall for a while, but I could not specify the place; but the Canadian dredge has been dredging there along in front of the lighthouse, and, instead of following the old channel, she has taken another course, and come in where we used to walk across, pretty near dry feet.

Mr. MARSCHALK. There is an inner channel and an outer channel?

Mr. WHEELER. Yes.

Mr. MARSCHALK. The old channel used to come out at Burton Island. We are not speaking of that; we are speaking of the mouth of the channel proper. When did they dredge there?

Mr. WHEELER. Last year they dredged out there.

Mr. MARSCHALK. And the year previous?

Mr. WHEELER. Yes.

Mr. MARSCHALK. What is the result of the dredging? What are the conditions at the mouth at the present time?

Mr. WHEELER. Well, they can get in and out of there with great difficulty; they have to have daylight pretty near, and they have to have those lighthouses and buoys.

Mr. MARSCHALK. Do you know the conditions of the water there at the present time—the depth of the water?

Mr. WHEELER. I could not say as to soundings.

Mr. MARSCHALK. Have you known of any boat that had to tie up on account of shallow water?

Mr. WHEELER. Yes.

Mr. MARSCHALK. What boat?

Mr. WHEELER. The *Kenora*; it had to lie up there.

Mr. MARSCHALK. It could not cross that bar?

Mr. WHEELER. No.

Mr. MARSCHALK. Any other boat?

Mr. WHEELER. Not to my knowledge; there may have been, but they did not have to tie up there.

Mr. MARSCHALK. You have not taken soundings of that?

Mr. WHEELER. No.

Mr. TAWNEY. What is the draft of the *Kenora*?

Mr. WHEELER. I understand she is 5 feet. They can put her down deeper, but by filling the water spaces she is 5 feet; otherwise she requires 6 or 7 feet without touching.

Mr. MARSCHALK. In your opinion, is the high water we have had of late years to the benefit of navigation interests?

Mr. WHEELER. It has spoiled it.

Mr. MARSCHALK. It spoiled the mouth of the Rainy River?

Mr. WHEELER. Yes; shut her up altogether; she is nothing but a sand bank now.

Mr. MARSCHALK. Did you have any difficulty in navigating any part of the Lake of the Woods in the early days?

Mr. WHEELER. Not in the least.

Mr. MARSCHALK. You could reach any part of the lake by the use of the buoys that it was necessary to reach?

Mr. WHEELER. Yes.

Mr. ANDERSON. Where did you live when you were working on these boats?

Mr. WHEELER. The first two years I have reference to I lived at Kenora.

Mr. ANDERSON. And after that?

Mr. WHEELER. At the mouth of the river.

Mr. ANDERSON. In those days the navigation interests were very important, were they not?

Mr. WHEELER. No; it was not so very important. What importance do you mean?

Mr. ANDERSON. I mean they were of very considerable importance to the town of Kenora, for instance, and the people on the Lake of the Woods and up the Rainy River?

Mr. WHEELER. Well, Kenora derived all the trade of the river and everything like that.

Mr. ANDERSON. Was it an important business in those days, or was it not? I only want your opinion.

Mr. WHEELER. I do not understand what you mean by this important business.

Mr. ANDERSON. You can not say whether it was an important business or not?

Mr. WHEELER. Why, it was an important business for the people of the country to get in and out of there.

Mr. ANDERSON. I suppose it was important that that business should be kept up?

Mr. WHEELER. Certainly.

Mr. ANDERSON. And the reason it was not kept up was why?

Mr. WHEELER. Which?

Mr. ANDERSON. The navigation of the Rainy River; why did they not continue to navigate the Rainy River?

Mr. WHEELER. At what point?

Mr. ANDERSON. Where they have stopped navigating it now practically?

Mr. WHEELER. After the railroads came in and they began to build other boats, of course these little ones were eaten up by the larger companies.

Mr. ANDERSON. By the bigger boats?

Mr. WHEELER. Yes.

Mr. ANDERSON. You remember when the old rollerway dam was put in at Norman?

Mr. WHEELER. Yes.

Mr. ANDERSON. What was the object of that?

Mr. WHEELER. That is something I could not tell you what the object was.

Mr. ANDERSON. You do not know what that was?

Mr. WHEELER. No; I do not. I know the dam was constructed there.

Mr. ANDERSON. At that time you were keeping on these boats and very active in connection with navigation, and you do not know why the old rollerway dam was put in?

Mr. WHEELER. No; I do not.

Mr. ANDERSON. Do you know what the effect of placing that old rollerway dam was on navigation?

Mr. WHEELER. No, sir; not the least in the world.

Mr. ANDERSON. It had no effect?

Mr. WHEELER. It did not help navigation one particle. It was the starting in of ruining of navigation.

Mr. ANDERSON. If it was put in for the purpose of improving navigation, it failed in its object?

Mr. WHEELER. Certainly.

Mr. ANDERSON. Explain in what way putting in the rollerway dam interfered with or spoiled navigation, as you put it.

Mr. WHEELER. By destroying the mouth of the river to come in there.

Mr. ANDERSON. How did it destroy it?

Mr. WHEELER. It raised the water so that it was stagnant there; instead of having a current to keep the channel clear of sand, it allowed the sand to roll in and covered the outside bar. There was a middle ground between the two channels—what they call the east and west channel—a middle ground of sand, which was half a mile long and a quarter of a mile wide, which always used to set out—well, I have seen it as high as 3 feet, the banks around it, and after the roller dam was put in the water began to rise and rise and allowed these bars to float into the channel.

Mr. ANDERSON. Then the putting in of the rollerway did raise the water?

Mr. WHEELER. Yes.

Mr. ANDERSON. And in your opinion it is in the interests of navigation that the water should be kept low?

Mr. WHEELER. It is at the mouth of the river and on the Lake of the Woods, because these reefs were always visible and a man was not in danger of striking them.

Mr. ANDERSON. Then the lower the water there, you think, the better for navigation?

Mr. WHEELER. I should think it would be, for navigation.

Mr. MARSCHALK. Going back to the present and previous conditions existing at the mouth of Rainy River, will you explain to the commission the wave action on the bar, immediately outside on the lake side, immediately west of the so-called river bed, within the lake, the effect of the wave action on the river channel prior to the raising of the lake and subsequent to the raising of the lake?

Mr. WHEELER. This outside bar would break the waves, so that inside here at this boom, at the time it struck there, it had no force to shake up the sand and drive it into the channel.

Mr. MARSCHALK. As I understand you, in regard to the wave action, the bar would be either out of water or so near the surface of the water that the force of the water would be broken a considerable distance away from the channel, consequently no sand or very little was carried into the channel?

Mr. WHEELER. Yes; and whatever was carried into it there was enough current to carry it away.

Mr. MARSCHALK. And after continuous high water——

Mr. WHEELER. It became stagnant and stayed right in there.

Mr. MARSCHALK. And there is no river bed there?

Mr. WHEELER. It is all on the same level and the main channel is shut up completely.

Mr. ANDERSON. You do not remember whether you were one of the persons who signed a petition to the Government, asking for the putting in of the old rollerway dam?

Mr. WHEELER. No; I never did.

Mr. ANDERSON. Did you ever hear anything about that petition?

Mr. WHEELER. No.

Mr. ANDERSON. Never heard anything about it being circulated in Kenora at that time?

Mr. WHEELER. No.

Mr. POWELL. I think it was in 1883 when you began navigation?

Mr. WHEELER. Yes.

Mr. POWELL. You stated there was no dam then?

Mr. WHEELER. No.

Mr. POWELL. No obstruction to the natural flow of the water?

Mr. WHEELER. No; nothing more than driftwood would naturally stop the water there.

Mr. POWELL. At that time did the waters of the lake not reach high levels?

Mr. WHEELER. Oh, yes; they would. When there was high water at this end of the lake, it would be low at the other end, but by the lake being low at the other end it caused a great drought of the water; but it would only last a short time there, and they would have high water. What we called high water in those days and what you have for high water now is quite different altogether, far different. If the water would come down to the normal stage in those days, very few people would know the condition of the Lake of the Woods.

Mr. ANDERSON. Pretty low?

Mr. WHEELER. Yes; the island at the end of the fishery as you come in the mouth of the river was 3 feet out of the water. I used to cut hay on that myself—cut 14 or 15 tons of hay.

Mr. ANDERSON. What was the range of levels in those days? We have evidence it was 8 and 10 feet between high-water and low-water level.

Mr. WHEELER. No; there was no such range as that on this lake.

Mr. ANDERSON. You have observed these watermarks on the rocks at the other end?

Mr. WHEELER. Both ends.

Mr. ANDERSON. They are more easily seen at the other end, are they not?

Mr. WHEELER. Well, I will tell you. The reefs are a thing that neither grow up or grow down, and we took more particular attention to those than to the watermarks.

Mr. ANDERSON. About the marks; when you first navigated the waters of the lakes, were those marks about the same as they are to-day?

Mr. WHEELER. No.

Mr. ANDERSON. They were not?

Mr. WHEELER. No.

Mr. ANDERSON. When did you first observe those marks?

Mr. WHEELER. When I first started on the lake.

Mr. ANDERSON. I thought they were not there when you first started?

Mr. WHEELER. Oh, yes; they were. You misunderstood me.

Mr. ANDERSON. I must have. When you first began the navigation of the lakes, these watermarks were on the rocks at the upper end of the lake?

Mr. WHEELER. Yes.

Mr. ANDERSON. Just about the same as they are to-day?

Mr. WHEELER. Yes—no, no; they were not up as high as they are to-day.

Mr. ANDERSON. Not as high?

Mr. WHEELER. No; nowheres near it. There are new watermarks come on since I have come there.

Mr. ANDERSON. When would the new watermarks come?

Mr. WHEELER. Since the dams were put in.

Mr. ANDERSON. Have you any record, or are you speaking of recollection?

Mr. WHEELER. I will tell you. This year I was noticing in the lake, for instance, going through one place where my stepson put his name on the rock, and the high-water mark then was about, I think, as near as I can remember correctly, it would be about 6 feet below where his name was. Well, now, this season, when I went down, I looked at the same spot, and I just happened to take notice of his name, and it drew my attention to it, and I noticed there was a watermark then within about 2 feet of that.

Mr. MARSCHALK. Was that Eddie Hopper, your stepson?

Mr. WHEELER. Yes.

Mr. POWELL. Then, taking those early days, you say there was a great difference between the levels of the lake at the upper end and at the lower end. Do you mean there was a kind of very noticeable run of water through the lake?

Mr. WHEELER. There was much more current on account of there being no dams there.

Mr. POWELL. And there was a noticeable current all through the lake at that time?

Mr. WHEELER. Why, certainly.

Mr. POWELL. I am not stating whether you are right or wrong, but I am simply remarking that you and the engineers are terribly at loggerheads over that. To-day is there more water or less water escaped ordinarily at Kenora than there was formerly?

Mr. WHEELER. No; there is not; nowhere near it.

Mr. POWELL. Nowhere near as much?

Mr. WHEELER. No.

Mr. POWELL. When the water was low, it appears by the evidence of the engineers—I am only asking for information, so that you can stick to your opinion—that in these early days the channel of the river was smaller and the discharge when the river was down was small, and consequently there would not be much water coming through the lake, but at high stages, when the opening of the river was large, there would be more passing through the lake than there would be to-day, but at low tide there would be a great deal more

passing through the lake to-day than there was then. Is that your opinion?

Mr. WHEELER. No; there could not be, and I will tell you the reason why. There are two channels in Kenora coming out. There is one called Rat Portage Channel and the other the Keewatin Channel. The Rat Portage Channel or the Kenora Channel, as it is now, is shut up altogether by the electrical plant. There is nothing through there now only just the fish slide. Well, if you take and shut one channel up and the other channel is open no more than it usually or always is, for it is nothing more than a bed of rock where the water goes through, and it is not blasted out to my knowledge—how can the water get out of the lake through the one channel as well as the two?

Mr. POWELL. Are you not losing sight of the fact that these power wheels, with their flumes, are away down in the river, about 20 feet from the surface, where the exit of the water would be increased on account of the head and the aperture through which it goes?

Mr. WHEELER. But there were other channels shut up. The railway was shut up altogether in time of high water in the early days, which is not spoken of now at all. There was a channel through there at the old boom where Ross, Hill, and Brown were going to erect a mill in there. Well, then, the C. P. R., I do not know what was the trouble with them, but at any rate they did not put their mill in there; that used to be a channel from the Lake of the Woods. Well, there the old mill stood, down where they had their water mill was another entrance to the Lake of the Woods, which is shut up altogether. Now, there is nothing only the one channel to let the water out, except what they used in those mills. There were water wheels running there before. There was the Mather mill and another mill there, and they used a lot of water.

Mr. POWELL. They were not large mills?

Mr. WHEELER. They were good-sized mills. They turned out 100,000 feet or over, say 200,000 feet; I think that was the capacity, but I know they were good large mills.

Mr. POWELL. Where would that lumber go for market?

Mr. WHEELER. West.

Mr. POWELL. That was after the construction of the C. P. R.?

Mr. WHEELER. Yes.

Mr. POWELL. You are a very interesting witness, because you are the only man who has been before us who knew how things were or who spoke from personal experience as to the state of affairs before the dams and logs were put in there, and if you know anything about it I would like you to give us your full knowledge.

Mr. KEEFER. In those days did you ever run into Shoal Lake with any of the boats you have mentioned?

Mr. WHEELER. No.

Mr. KEEFER. Never ran in there?

Mr. WHEELER. No.

Mr. KEEFER. Did they not tow a lot of logs out of there?

Mr. WHEELER. I understand there were logs came from there, but I do not know anything about them.

Mr. KEEFER. You do not know anything about Ash Rapids?

Mr. WHEELER. I was once up to the foot of Ash Rapids, and that was in the evening.

Mr. KEEFER. Do you know what the effect would be of the high water on those rapids?

Mr. WHEELER. I do not know.

Mr. KEEFER. Do you know what would be the effect on the rapids called the Long Sault, in Rainy River? Did you ever navigate up those?

Mr. WHEELER. Yes.

Mr. KEEFER. What difference did you find in going up and down those rapids when it was high and low water?

Mr. WHEELER. It would help it at the bottom of the rapids.

Mr. KEEFER. Easier to get up?

Mr. WHEELER. Yes.

Mr. KEEFER. And in high water—

Mr. WHEELER. In real high water you had the hardest time to go over. Most of the boats would climb the lower part, but it was at the upper pitch they had the most trouble in getting over.

Mr. KEEFER. Your judgment is that low water was the best time to get over those rapids?

Mr. WHEELER. Oh, it would not be on those rapids, because the highest water would be the best you could get on these rapids, but that would not be the difficulty. The higher the water in the rapids the better it would be. We all know about that.

Mr. KEEFER. Did you hear Mr. Meyer's explanation about the maps when he was opening up this matter to the commission?

Mr. WHEELER. No.

Mr. POWELL. Do you remember, speaking of Shoal Lake, that it was generally known there was a kind of reversing current between the Lake of the Woods and Shoal Lake, and that sometimes when the snow was melting in the spring of the year the current would be out, and then, through evaporation, the current would be in?

Mr. WHEELER. I have heard it spoken of.

Mr. POWELL. That is the fact?

Mr. WHEELER. I have heard it spoken of several times—

Mr. POWELL. I place such importance on your testimony that I want to exhaust all your knowledge. If that is the case, would it not be true that when the current was reversed and flowing into Shoal Lake the Lake of the Woods level would require to be just about as high as it is to-day in order to bring about that state of affairs?

Mr. WHEELER. I could not say exactly on that.

Mr. POWELL. Then, afterwards, do you remember when they constructed—I got this information from another matter we had before us in Winnipeg—when they constructed winches to draw their scows and bateaux up into Shoal Lake over the fall that was there—that was in the gold-digging time?

Mr. WHEELER. I tell you I know nothing about Shoal Lake at all, but as far as what you are speaking of I do not remember anything like that at all.

Mr. POWELL. You did not know there were winches there for that purpose?

Mr. WHEELER. No.

Mr. POWELL. Did not know they were used at certain times of the year and at other times of the year the process would have to be reversed?

Mr. WHEELER. I do not know anything about that.

Mr. POWELL. Just about the current, do not understand what I ask to be any reflection on you. Are you a deep-sea captain?

Mr. WHEELER. No.

Mr. POWELL. Have you had much opportunity to judge of the action of water on coast line? Don't you know that the wearing away of a coast line, especially if it is soft and marshy, is a very common thing?

Mr. WHEELER. It is, certainly.

Mr. POWELL. And it is a common thing to find accretions to the coast line and the coast line to run out?

Mr. WHEELER. Yes.

Mr. POWELL. The present port of Romney on the coast of England is over three miles farther out to sea than the original Romney, and Goodwin Sands was once upland, but now covered with water. So that there is nothing extraordinary about the attrition or the wearing away of a bank by tide and current, or about the addition to the bank in another place. The keeping up of the water generally throughout that lake would unquestionably have some of the effect you are speaking of, and we have noticeable evidence of the effect at the mouth of the Mississippi, where the detritus forms the banks. In the first place, if the water was penned up for greater lengths of time through the summertime, would the effect not be to dissipate the current and fail to keep open the main channel; would that not be the effect?

Mr. WHEELER. I do not understand you exactly.

Mr. POWELL. If you have the water up higher generally, would the effect not be to cause the water to leave the channel and spread out and lose its force?

Mr. WHEELER. If you have the water high enough to spread out over the country, which it has been——

Mr. POWELL. Might not the cause of the present difficulty be this: That owing to the equalization of the level more than in olden days the waters were not confined to the narrow channel as previously, and there was not the same amount of scouring and, consequently, the channel would fill up?

Mr. WHEELER. Certainly.

Mr. POWELL. Might that not be overcome, as it is overcome in other places, by the construction of dams or breakwaters, to change the flow and do artificially what was done previously naturally, and keep the channel open that way?

Mr. WHEELER. I do not think it can be done that way in stagnant water. If you had the current you could do it.

Mr. ANDERSON. Do I understand you that the present high-water mark appearing on the lakes was not there in 1884 or 1885?

Mr. WHEELER. No, sir; it was not.

TESTIMONY OF PAUL MARSCHALK, OF WARROAD, MINN.

(Paul Marschalk, being first duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. MARSCHALK. In Warroad.

Mr. STEENERSON. How long have you lived here?

Mr. MARSCHALK. I have lived here since the spring of 1909.

Mr. STEENERSON. How old are you now?

Mr. MARSCHALK. Forty-six.

Mr. STEENERSON. How long have you been familiar with the Lake of the Woods?

Mr. MARSCHALK. Since May 1, 1892.

Mr. STEENERSON. That will be 23 years.

Mr. MARSCHALK. That is correct.

Mr. STEENERSON. In what capacity have you been employed on the Lake of the Woods?

Mr. MARSCHALK. Fisherman, sailor, master, and pilot of steamboats ever since 1892 up to 1909, when I took charge here for the Armstrong Trading Co.

Mr. STEENERSON. Are you or have you been a duly licensed pilot?

Mr. MARSCHALK. Yes; I hold an unlimited master's license for Rainy River, Rainy Lake, and the Lake of the Woods.

Mr. STEENERSON. From the United States Government?

Mr. MARSCHALK. From the United States Government.

Mr. STEENERSON. How long have you acted as such?

Mr. MARSCHALK. Since September, 1904, when I got my first license after taking my examination.

Mr. STEENERSON. In regard to the level of the Lake of the Woods, did you have any occasion or reason for closely observing the level of the Lake of the Woods during this time?

Mr. MARSCHALK. Yes, sir.

Mr. STEENERSON. What was the occasion?

Mr. MARSCHALK. I worked out a set of levels prior to getting hold of the observed levels of the engineers of the commission. Some years I was out a foot and a half.

Mr. STEENERSON. Did you observe them?

Mr. MARSCHALK. I did, particularly since we were first hurt by high water.

Mr. STEENERSON. How was it when you first observed the levels?

Mr. MARSCHALK. I dare say that some of the years, prior to the operation of the stop logs in the main dam, the lake would attain perhaps at its high stage a level of within 1 or 2 feet of what it has done in the present summer, but that was a short period. As a rule it would reach its highest mark in June, remain stationary, perhaps, for a period of two weeks, and begin to drop. In August it would drop rapidly.

Mr. STEENERSON. Did you observe anything with regard to these sand beaches around the lake that have been spoken of?

Mr. MARSCHALK. Yes, sir.

Mr. KEEFER. That is all in evidence. There is no reason for repeating it here. It is only a duplication of the evidence.

Mr. TAWNEY. I recall that Mr. Marschalk made a very complete statement when he was before the commission in 1912 with regard to physical conditions in attempting to show the level of the lake at some prior time, and in so far as he can avoid duplicating that statement he should do so.

Mr. STEENERSON. I did not know anything about that. I will be very brief.

Mr. MARSCHALK. There are perhaps some things that have occurred to me since that I did not state in my first examination before the commission.

Mr. TAWNEY. Go ahead, then.

Mr. MARSCHALK. If you will permit me, I will submit some of my opinions. Some of the old Indians say that sometimes during the summer levels of certain years they were able to walk from Driftwood Point to Garden Island. That is shown on sheet No. 4. We have this year a 1,062 level and anywheres from 8 to 10 feet of water over the deepest part of that bar. I will grant you that the wave action may have washed down some of this sand, but it will give you some kind of an idea as to the condition along there. They contend that it was originally part of the main channel.

Take sheet No. 10, showing Warroad Harbor. In speaking with my father-in-law, Mr. William Zippel, whom you will probably have on the stand before you are through here, I tried to see if he could not recollect certain dates, etc. According to his statement, the first time he entered the Warroad River was in July, 1886. He has been a fisherman all his life, and as a boy lived on Lake Michigan. When he came to the United States he went to Kenora, in 1884. He entered Warroad Harbor in July, 1886, and this is what he has to say regarding the conditions existing at the mouth of Warroad River. He came across with a flat-bottomed sailboat that, he claimed, would not draw over 10 inches of water.

Mr. KEEFER. That is not evidence.

Mr. TAWNEY. Mr. Marschalk, whatever your father-in-law may testify to will be evidence, but there is no necessity of your going over that.

Mr. STEENERSON. I believe that under the strict rules of evidence that would have to be omitted.

Mr. MARSCHALK. Take sheets Nos. 10, 11, 12, 13, and 14, and the shore along there in the early days, the first few days I was on the lake shore. I have traveled myself and others have come from Warroad to the mouth of Rainy River by fording the creek. To-day you will find three-quarters of a mile of the old sand beach that is below water. That is all that is left, barring Rocky Point and Long Point, that could not be washed away.

Mr. STEENERSON. You have some personal knowledge of the changes in Warroad River. You can state what you have observed.

Mr. MARSCHALK. The first time I entered Warroad River was in the summer of 1898. I came in over the ice in the fall of 1897. Since that time I have traveled in here with a sailboat and later on with a steamer. In 1898 you could not go outside of the river bed proper; you would get stuck. The rest was just partly covered with water. To-day you can go anywhere with a boat drawing a foot and a half of water.

Mr. STEENERSON. When you first knew Warroad River it was lower and there was more current in the river?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. Did you observe when you were first here the big rock at Zippel Bay?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. Have you observed it in late years?

Mr. MARSCHALK. Yes, sir.

Mr. STEENERSON. Have you noticed anything about the Warroad River with reference to that big rock?

Mr. MARSCHALK. Yes; in the early days it used to be out of water anywhere from 1 to 2 or 3 feet. In late years it has been entirely submerged. I do not know the elevation, but I am within 6 inches in saying about 1,058.

Mr. STEENERSON. Is that the same rock where there is a proposition to have the United States Government build a lighthouse?

Mr. MARSCHALK. That was one of Mr. Zippel's schemes. He can tell about that himself.

Mr. STEENERSON. Have you also been familiar during this time with Rainy River?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. You say you hold a pilot's license for that river. You may explain to the commission the effect on navigation of the different heights since you have been here.

Mr. MARSCHALK. The first three years—1892, 1893, and 1894—I was stationed at Oak Point, as it is called on your sheet. It was Rainy River fishery. I was in charge of the sailboat attending to the nets, and sailed in and out of the river every day that it was possible to lift our nets. All steamers that were navigating the river took soundings there, and the conditions were practically the same as Mr. Wheeler explained. We had about 24 feet of water. Apparently no noticeable changes occurred during those three years. The first change that I noticed was during the high water of 1896 and 1897, and the subsequent low water of 1898 evidently repaired what little damage was done to that channel; but since 1899 to the present time there has been a general washing of that channel from the bar immediately west of it, and it has flattened it all out.

Mr. STEENERSON. Were you familiar with all of those steamers plying on the Rainy River and the Lake of the Woods?

Mr. MARSCHALK. Yes, sir; I saw them pass there day after day.

Mr. STEENERSON. How many were there altogether?

Mr. MARSCHALK. I think there were about six of the large tow steamers and two passenger boats in operation in those days. They took logs from Rainy River and Rat Portage. The two passenger boats were the *Island Maid* and the *Shamrock*.

Mr. STEENERSON. The logging traffic was very much greater in those days?

Mr. MARSCHALK. Those five or six boats were in the employ of the sawmill, and were employed constantly during the entire summer.

Mr. STEENERSON. What do you know about the soundings that were spoken of?

Mr. MARSCHALK. I have taken soundings myself, and we had nothing less than 18 feet and up to 24 feet.

Mr. STEENERSON. Across the bar or in that channel?

Mr. MARSCHALK. Across the chanel. There was no bar in those days.

Mr. STEENERSON. When did you first observe that the channel became obstructed?

Mr. MARSCHALK. In 1897, although I understood that some harm was done to it in 1896. I was in the mouth of Rainy River but once during 1896.

Mr. STEENERSON. You, of course, knew this point which some call Four Mile Point?

Mr. MARSCHALK. It is Oak Point on the sheets.

Mr. STEENERSON. What was the length of that when it was a point?

Mr. MARSCHALK. I think it was about four miles and a quarter.

Mr. STEENERSON. When you first knew it was it a continuous bar or point?

Mr. MARSCHALK. Absolutely.

Mr. STEENERSON. About how wide was it?

Mr. MARSCHALK. It differed in places. I dare say it was probably a quarter of a mile wide in some places.

Mr. STEENERSON. About what time did it commence to wash away?

Mr. MARSCHALK. In 1897.

Mr. STEENERSON. So that the time of the washing away of that Four Mile Point was about the same time as it commenced to fill up the channel?

Mr. MARSCHALK. 1897 repaired it somewhat. There has been a continual encroachment on that shore line since 1899.

Mr. STEENERSON. Judging from your observations and the soundings there, where did that sand mostly come from that filled up the channel?

Mr. MARSCHALK. From the bar immediately west of the channel.

Mr. STEENERSON. From Four Mile Point?

Mr. MARSCHALK. From the land, perhaps, but the bar that laid there prior to 1896 was probably only from a foot to two and a half feet at the outside. Any time coming in with a flat-bottom boat when there was a storm on or when there were just small waves we could not cross that bar. We would have to go around by the steamboat channel.

Mr. STEENERSON. This Four Mile Point was a continuous peninsula?

Mr. MARSCHALK. Yes, sir.

Mr. STEENERSON. Were there any people on this Four Mile Point when you first knew it?

Mr. MARSCHALK. At the bottom of the Four Mile Point there was Olaf Johnson's fishery.

Mr. STEENERSON. There was a fishery at the head of the bay?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. What was there farther down?

Mr. MARSCHALK. At the mouth of Rainy River there were two fisheries, the Baltimore Pickerel Co. and the Spencer Fishery.

Mr. KEEFER. All this is already in evidence.

Mr. STEENERSON. When did that begin to wash away?

Mr. MARSCHALK. It was done the first time to my personal knowledge in 1897.

Mr. STEENERSON. How has it been since then, a gradual washing away?

Mr. MARSCHALK. It has washed away the entire shore line at the bottom of Four Mile Point, where the Johnson Fishery was located. It washed that out in 1909.

Mr. STEENERSON. How big an opening is there now at that place?

Mr. MARSCHALK. I dare say last year it was anywhere between a quarter of a mile and half a mile wide.

Mr. STEENERSON. There are a string of outlets now where there was formerly a peninsula.

Mr. MARSCHALK. It is absolutely the way that sheet shows it.

Mr. STEENERSON. You could not give the number of acres that have been washed away, could you?

Mr. MARSCHALK. I could not; no. I have not any data on that, Mr. Steenerson.

Mr. STEENERSON. Is it still being washed away?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. How is it in regard to your fisheries, getting up to the buildings or otherwise?

Mr. MARSCHALK. If anything, that, as the elevation at Oak Point proper, has raised of late years. I dare say as the sand drifted along it has built a point across the channel. It is higher now, I think, than it was in 1892.

Mr. STEENERSON. What else is there with regard to the mouth of Rainy River that you wish to tell the commission?

Mr. MARSCHALK. I think it has all been covered. If the present year's level should be maintained it would be but a few years before the entire point would be washed out. The openings are growing larger from one year to another.

Mr. STEENERSON. It would destroy where you have your fishery?

Mr. MARSCHALK. It would destroy the fishery grounds as well as the buildings, etc.; yes.

Mr. STEENERSON. Are there expensive buildings there?

Mr. MARSCHALK. I think the building investments in that fishery are probably \$2,000. They are old, excepting the house which was built about two years ago, and cost approximately \$1,100.

Mr. TAWNEY. Has this reference to the buildings at Oak Point?

Mr. MARSCHALK. Yes.

Mr. TAWNEY. Is it your judgment that if the range of levels that has obtained during the last 6 or 8 years in the Lake of the Woods continues that the fishery will be wiped out entirely?

Mr. MARSCHALK. Yes; that is my opinion, and I think I am absolutely correct.

Mr. TAWNEY. Could you value the buildings there and state how much they are worth?

Mr. MARSCHALK. I think I paid Mr. Steenerson for a fraction there some years ago \$1,200. I think the Curry land was \$2,500. I do not say that is the actual value of this land, but it was worth that for fishing purposes.

Mr. TAWNEY. And the buildings, you say, are worth \$2,000.

Mr. MARSCHALK. Yes. If we remain we will have to rebuild our ice house and fish house and dock. We put up a new cookhouse which cost about \$1,100. Our buildings have been nearly wiped out by depreciation.

Mr. TAWNEY. Could the property be saved by revetment?

Mr. MARSCHALK. Yes, sir.

Mr. TAWNEY. What would that cost?

Mr. MARSCHALK. I am not prepared to say; possibly a couple of million dollars, because nothing but a concrete pier would stand on account of the ice.

Mr. TAWNEY. The concrete pier, of course, would not be a revetment, but I was wondering if there was a bank there that could be covered with stone to protect the property?

Mr. MARSCHALK. You probably could do that, but there are four miles of shore line, and it would be a very expensive proposition. The entire bank would wash away. I think it has an elevation of about 1,063 at the present time, and I dare say that the buildings could be protected by an expenditure of about three or four thousand dollars.

Mr. STEENERSON. I will go into another feature of it a little later. Now, Mr. Marschalk, what about the navigation in the rest of the lake? You may state to the commission what the changes in the levels have to do with the rest of navigation.

Mr. MARSCHALK. So far as I honestly know, it would make no difference to any other portion of the lake excepting the harbors like Warroad Harbor and Zippel Harbor. If we had 10 feet lower it would be possible to navigate with no more difficulty than we have at the present time.

Mr. STEENERSON. You heard the United States engineers testify that if it were higher than it is now it would be necessary to protect the Government property here?

Mr. MARSCHALK. At the stage anywhere above 1,057 and 1,058 it would be necessary not only to dredge Rainy River, Warroad River, and Zippel Harbor, but it would be also necessary to build a pier the entire length of such dredged channels to protect them from being washed in with the sand. 1,057 probably would not damage the Rainy River any at all. The bar that you have heard spoken of immediately west of that old river bed would protect the channel.

Mr. GLENN. If you rubbed out this bank entirely what would be the level in the lake?

Mr. MARSCHALK. I dare say that the engineers' estimation can not be improved upon.

Mr. GLENN. They do not make an estimation of that.

Mr. MARSCHALK. We used to have a fluctuation of anywhere from 3 to 5 feet a season, but the highest part would remain there but two weeks.

Mr. GLENN. In making your levels have you ever made an estimate at what range you could keep it and not injure the farms and fisheries and navigation?

Mr. MARSCHALK. From my opinion, based upon a number of years' experience, I would say that the range of 1,057 would be best. It would not hurt the fishing interests nor the navigation nor the farming interests.

Mr. GLENN. What effect would that have upon wharves that have been erected on account of this present elevation 1,061?

Mr. MARSCHALK. Do you mean the channels that have been dredged?

Mr. GLENN. No; the wharves and things of that kind.

Mr. MARSCHALK. They would have to be lowered, which could be done with a very little expense, and I dare say that everybody that owns a wharf in the Lake of the Woods is a fisherman, except in Kenora, and they gladly lowered that.

Mr. STEENERSON. That would be a very small matter?

Mr. MARSCHALK. A very small matter.

Mr. STEENERSON. There is nothing more about the question of navigation that you wish to say to the commission?

Mr. MARSCHALK. Nothing more.

Mr. STEENERSON. Now I want to examine you about the fishing business. You are manager of the Armstrong Trading Co., I believe?

Mr. MARSCHALK. Yes, sir.

Mr. STEENERSON. That is an institution engaged in fishing?

Mr. MARSCHALK. Yes, sir; buying and selling. They have a fishery over on the Canadian side.

Mr. STEENERSON. How many fisheries do they operate?

Mr. MARSCHALK. It owns but one; that is the Bigsby Island fishery on the Ontario side of the lake.

Mr. STEENERSON. You also operate a fishery on the point?

Mr. MARSCHALK. Yes, sir; myself and two other men are partners there; and I am interested in the Rainy River fishery with my brother-in-law.

Mr. STEENERSON. State generally how many men are employed now in the fishing industry on the American side of the Lake of the Woods.

Mr. MARSCHALK. Some time ago upon request I furnished Mr. Meyer those figures, and I think they are a matter of record. However, I have a memorandum here. The total expenditure for wages, including the cost of feeding the men in the American fisheries, would be about \$42,000 per annum.

Mr. STEENERSON. Have you the value of the property employed? If so, give the figures.

Mr. MARSCHALK. It is a matter of record.

Mr. STEENERSON. Well, I did not know that. Now, Mr. Marschalk, you may state whether or not this higher elevation of the Lake of the Woods that has prevailed in late years has had any effect upon the fishing business.

Mr. MARSCHALK. It certainly has.

Mr. STEENERSON. What has been the effect, detrimental or otherwise?

Mr. MARSCHALK. Detrimental in so far as the waters of the Big Traverse are concerned. It has no effect on the fishing along the islands where the water is deep and clear, but owing to the low shore the banks are undermined during a stage of high water by wave action, and where there is low shore the muskeg is carried out and discolors those waters, and no fish will go in those waters. But the waters of the Little Traverse and the north side of the Grand Peninsula are clear and deep. Fishing is not hurt there. But the American fisheries are hurt by a high stage of water.

Mr. STEENERSON. How does it affect the propagation, the life of the fish, this change in the level and the washing out of the banks and the discoloring of the water?

Mr. MARSCHALK. I think that is covered by my testimony given in 1912. For instance, during the year 1905, when we had an exceptionally high stage of water, the entire waters of the Big Traverse were dirty and discolored by clay. I noticed the yellow pike, which are the most desirable food fish we have in the Lake of the Woods, were sickly; had growths in their fins, which I did not notice in the fish caught along the islands.

Mr. STEENERSON. I was asking particularly about the propagation, the spawning, and whether this state of high level had any effect on that?

Mr. MARSCHALK. If we had a permanent stage of water, like say 1,061 or 1,062, I think the fish eventually would entirely disappear from the waters or nearly disappear from the waters of the Traverse. As long as they had clear water to go to they would leave the dirty water.

Mr. STEENERSON. In what way does this high water affect the spawning beds?

Mr. MARSCHALK. The fish will go to feeding grounds in order to spawn. If they are muddy or covered with clay or dirty matter the fish will stay away from there. They will find other beds that are clean.

Mr. STEENERSON. Do you know whether or not any of this floating matter, this dirt or muck or driftwood, interferes with the propagation of fish?

Mr. MARSCHALK. They have practically left the Lake of the Woods.

Mr. STEENERSON. Then this high level has had an effect upon the fishing business?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. Has there been more or less fish caught in late years than there was formerly?

Mr. MARSCHALK. It has held its own of late years. The lake produces anywhere from a million and a half to 2,000,000 pounds. The production has been about equally divided between the American and the Canadian fishermen, but this year in going over the figures I found that the Americans have produced only about 25 per cent of their catch and that would hold good for any year when we have had a high stage of water.

Mr. STEENERSON. Is there anything else you want to testify to?

Mr. MARSCHALK. I think that about covers the subject, Mr. Steener-son.

Mr. STEENERSON. Something was said with reference to the fishery at Four Mile Point or Oak Point, and you made a statement about the cost of a revetment to protect it. If your statement in regard to the future of that bar in case of high water should prove true—that is, that it would all wash away—would there be any suitable location for a fishery at that point?

Mr. MARSCHALK. The location would be there by protecting the buildings by a pier, but the fishing grounds would be gone. You would not expect to catch anything there.

Mr. STEENERSON. What I was interested in was the fact that because there was a long sand bar there that compelled the fish to go around it in order to get up the Rainy River it was a choice place for a fishery. Was that the reason?

Mr. MARSCHALK. It was according to the nice, clear, sandy bottom which would be a nice feeding ground for the fish and which is now being covered with dirty water.

Mr. STEENERSON. If that should be washed away by high water the Rainy River would flow over that?

Mr. MARSCHALK. It does so now where the current has been developed.

Mr. STEENERSON. Then, there would be no fishing ground there?

Mr. MARSCHALK. I do not think so.

Mr. STEENERSON. It would not be an economical plan to protect your fishery because there would be no fishing ground.

Mr. MARSCHALK. I do not believe you could operate that fishery properly with the bar being eliminated.

Mr. TAWNEY. You are familiar with the lake and the effect of different levels upon the various interests that are concerned in the utilization of the waters of the Lake of the Woods. What have you to say with respect to the most desirable range of levels of the Lake of the Woods and with respect to the maintenance, as near as possible, of these levels within that range.

Mr. MARSCHALK. I probably could answer that much more satisfactorily if I were an engineer and acquainted with the engineering problems involved. Speaking from an individual standpoint as to the most desirable maximum, I would say that 1,057 would be the most desirable level for all interests concerned.

Mr. TAWNEY. Then, what would you take as the minimum? What would be the range?

Mr. MARSCHALK. Any range that could be maintained as near to that as possible.

Mr. TAWNEY. I want to get your idea as to the range between the maximum and the minimum levels.

Mr. MARSCHALK. I have an idea that under ordinary conditions a range within 2 feet of that—that is, the minimum—would never have to go below 1,055.

Mr. TAWNEY. Do you think it is possible to maintain a range of 2 feet?

Mr. MARSCHALK. We have had a number of years where the fluctuation has not exceeded 2 feet.

Mr. MIGNAULT. What years?

Mr. MARSCHALK. I think in 1901, 1902, and 1903 there has been hardly a fluctuation above that. I remember there was a very small fluctuation during those three or four years. I find the fluctuation was about $3\frac{1}{2}$ feet in 1900; about the same in 1901; about the same in 1903; about $2\frac{1}{2}$ feet being the maximum. I had it fixed in my mind that it did not exceed 2 feet.

Mr. TAWNEY. I desire to ascertain whether your further study of the problems of the lake levels had changed your opinion from that which you expressed three years ago, when you stated that you thought a range of one foot or one foot and a half could be maintained. I understand that you have modified your opinion?

Mr. MARSCHALK. Yes; I dare say you would have to have a range of 2 feet anyway, even with a conservation of the flood waters or waters tributary to the Lake of the Woods.

Mr. POWELL. Are you speaking of one year or a period of a number of years?

Mr. MARSCHALK. A number of years. It might be possible to maintain the fluctuation within 1 foot even with the present system.

Mr. STEENERSON. You state that speaking for all interests this would be the desirable level. What interests want the lowest?

Mr. MARSCHALK. The farming interests naturally would consider the removal of the dam a blessing irrespective of how it would affect other interests.

Mr. STEENERSON. What interests come next?

Mr. MARSCHALK. The fishing interests, of course, would be nearer my heart, and a level of 1,057 would be absolutely satisfactory to me, but the same level would not be detrimental to navigation interests.

Mr. STEENERSON. A higher level would require some expense for keeping the harbor improvements in repair?

Mr. MARSCHALK. They would have to build piers on both sides in some places, like in Warroad Harbor, the entire length of Rainy River channel in order to maintain that channel. The dredging work of the Dominion Government of 1913 and 1914 is practically wiped out to-day. Our tug, the *Isabel*, that draws but 6 feet of water, has got to stay at the dock of the Rainy River fishery, and they can not leave the next morning for Warroad. She would pound to pieces on the bar if there were any waves.

Mr. GLENN. What effect would an elevation of 1,057 have on the Government works?

Mr. MARSCHALK. You would have to dig lower.

Mr. GLENN. Maj. Peek said that if you maintained it at a lower level the Government would have to dig lower.

Mr. MARSCHALK. That is probably correct.

Mr. GLENN. But I understood him to say that at 1,057 the improvements could be maintained without digging lower.

Mr. WYVELL. I think he said that at 1,057 a full and efficient use of the harbor could be maintained.

Mr. MARSCHALK. Maj. Peek is undoubtedly correct in that, but I dare say that he would have to dig now to maintain it. They may have a certain depth on paper, but we have not the actual depth that they have on paper.

Mr. POWELL. Mr. Marschalk, did I understand you to say that the fish haunts for purposes of spawning were their general haunts?

Mr. MARSCHALK. Not altogether. It used to be that along the south shore of the Lake of the Woods years ago. It has seemed that they keep their grounds pretty well. They had their feeding grounds.

Mr. POWELL. I have always had the idea that the reverse was the case.

Mr. MARSCHALK. That holds absolutely right in other lakes and in the north end of the lake, but the shore line around the Big Traverse is entirely different, according to what I have heard from old fishermen. The fish stay around there and have their grounds there.

Mr. ANDERSON. In what way are you interested in navigation, Mr. Marschalk?

Mr. MARSCHALK. The Armstrong Trading Co. has steamers running out of these ports picking up fish. Two round trips are made a week.

Mr. ANDERSON. The interest is connected with fishing?

Mr. MARSCHALK. Yes, sir.

Mr. ANDERSON. Your principal interest is fishing, so far as the lake is concerned?

Mr. MARSCHALK. If we could not maintain navigation, I could not continue fishing.

Mr. ANDERSON. Is that the extent of your interest in navigation?

Mr. MARSCHALK. Absolutely.

Mr. ANDERSON. But your principal interest or your principal business is the fishing business?

Mr. MARSCHALK. The fishing business; yes, sir.

Mr. ANDERSON. I understand you to say that the American catch is decreasing in comparison with the Canadian catch.

Mr. MARSCHALK. This year; yes, sir.

Mr. ANDERSON. How do you account for that?

Mr. MARSCHALK. It is on account of the dirty water that exists in the Big Traverse.

Mr. ANDERSON. It is not because the Americans have fished the waters out more than the Canadians?

Mr. MARSCHALK. The fish do not respect the boundary line. They will move back and forth irrespective of the boundary line. At the present time they are going into Canadian waters because they are purer and clearer.

Mr. ANDERSON. There are Canadian waters affected just the same as your American waters?

Mr. MARSCHALK. Yes; the eastern shore line waters.

Mr. ANDERSON. The question of fish conservation does not enter into it at all, in your opinion?

Mr. MARSCHALK. Oh, no; I am also interested, and vitally interested, in fish conservation. I do not believe in killing the goose that lays the golden egg.

Mr. ANDERSON. Your principal complaint is that the fish now traverse the Canadian waters. Those waters being better and purer they have moved over there?

Mr. MARSCHALK. Yes.

Mr. ANDERSON. It is not that the fish have been killed out to any great extent, but simply that they have moved their haunts?

Mr. MARSCHALK. Yes.

Mr. TAWNEY. And that the moving is due to the high stage of water which drives them out of the Big Traverse?

Mr. MARSCHALK. Yes.

Mr. ANDERSON. But the high stage of water has been continuous for a number of years.

Mr. MARSCHALK. I have noticed that.

Mr. ANDERSON. And it is only this year that you have noticed an appreciable reduction in the American catch?

Mr. MARSCHALK. In 1905 the American fishermen were hurt much more than this year, owing to the same conditions.

Mr. ANDERSON. In between that you can not give us any particular year?

Mr. MARSCHALK. It has been fairly good fishing.

Mr. ANDERSON. In 1906?

Mr. MARSCHALK. In 1906 it was poor. In 1907 it was exceptionally good during the spring fishing, the first two or three months after the season opened, irrespective of high water.

Mr. ANDERSON. And it kept on?

Mr. MARSCHALK. It was just the first few weeks before the wave action had any chance to dirty up the Traverse.

Mr. ANDERSON. Up to this year the fishing has been good?

Mr. MARSCHALK. Reasonably good; some variation from one year to another. It was exceptionally good during the period of low

water in 1911; and very profitable in 1912. We have been barely making expenses since 1912. Most of them operated at a loss this year.

Mr. ANDERSON. Now, with reference to the question of navigation, Mr. Marschalk, you have changed your view as to the range of levels within which it is best to maintain the lake?

Mr. MARSCHALK. I have heard competent engineers claim it was impossible and I have just adjusted my opinion to theirs. I never claimed to be an expert on that.

Mr. ANDERSON. Whatever the engineers say about that—that is, competent engineers—you would agree to?

Mr. MARSCHALK. I would have no reason to dispute them any more than you would have to dispute us when it comes to navigation of the Lake of the Woods or fishing questions.

Mr. ANDERSON. Well, assuming that you know all about it.

Mr. MARSCHALK. I am not that kind of a man; but I have been at it for twenty some years, and I never do brag; yet I think I am as competent in either one of those callings as any man in the country.

Mr. ANDERSON. I think you are a very competent man. Everybody who has met you knows your ability. There are one or two things in your evidence that struck me as peculiar. For instance, you said if the lake were 10 feet lower it still could be navigated just as well as it can be now. You said that, did you not?

Mr. MARSCHALK. If I did not, I think I will make that statement now, barring the entrance to Rainy River and Warroad River. Yes; so far as the lake proper is concerned, I think so.

Mr. ANDERSON. And barring the harbors?

Mr. MARSCHALK. And barring the harbors.

Mr. ANDERSON. Are there no reefs in the lake?

Mr. MARSCHALK. I have found considerable, and there are thousands of them that I have not touched as yet. The lake, in fact, is full of reefs.

Mr. ANDERSON. What is the average depth of the lake?

Mr. MARSCHALK. The Big Traverse has an extreme depth that I have been able to find of 40 feet; generally speaking, 36, away from the shore line.

Mr. ANDERSON. What is the average depth? Do you know that?

Mr. MARSCHALK. Out in the Traverse, a half mile or a mile away from the shore line, you will find anywhere from 30 to 36 feet. When you enter the Big Traverse you will have from 30 to 40 or 50 feet, and on the other side of the Grand Peninsula 40 feet. I know I have thrown a lead line of over 30 fathoms, perhaps, and could not touch bottom in some places.

Mr. ANDERSON. Of course, I can understand that; but there are other places where a reduction of 10 feet would make a very serious difference in navigation.

Mr. MARSCHALK. None but the Kenora Channel that I know of. You have to go through narrow channels now; Devils Gap, for instance.

Mr. ANDERSON. It is your opinion that lowering the lake 10 feet would not make any difference in navigation, except so far as the harbors are concerned?

Mr. MARSCHALK. That is all.

Mr. ANDERSON. Of course, it would put the harbors right out of business.

Mr. MARSCHALK. It would put them out of business, and they would have to be rebuilt.

Mr. ANDERSON. You do not know anything about the reason for the rollerway dam being put in at Kenora?

Mr. MARSCHALK. It was prior to my time, and I have never heard anyone say why it was put in.

Mr. ANDERSON. But the first time you noticed a difference in the channel in Rainy River was in what year?

Mr. MARSCHALK. In 1897 I noticed a change there.

Mr. ANDERSON. Assuming that the rollerway dam was constructed in 1888, apparently it did not have any effect upon the filling up of the channel in the Rainy River at that time?

Mr. MARSCHALK. I am absolutely sure it did not during the years of 1892, 1893, and 1894. In those years I entered and left the river nearly every day, and there was no perceptible change.

Mr. ANDERSON. Then how do you account for the channel becoming obstructed in 1897?

Mr. MARSCHALK. On account of the very high and continuous stage of high water during that summer; higher than we had had previous to that time.

Mr. ANDERSON. Had it not been just as high previous to 1897?

Mr. MARSCHALK. I do not think it reached the same level in 1896. If so, it did not last as long.

Mr. ANDERSON. Do you say that 1896 was the first year of high water after the construction of the rollerway dam?

Mr. MARSCHALK. That was after 1892; as far as my personal experience goes back.

Mr. ANDERSON. Was there high water in 1897 too?

Mr. MARSCHALK. If anything, more so. It did more damage than in 1896.

Mr. ANDERSON. And in 1898?

Mr. MARSCHALK. There was very low water. In the spring at the time that the ice left the lake we had, probably, a level of less than 1,057.

Mr. ANDERSON. What difference was there in the level of the water in 1897 and 1898? You say it was very much lower in 1898 than in 1897?

Mr. MARSCHALK. Yes; considerably.

Mr. ANDERSON. How much lower, 4 feet, 5 feet, 6 feet, or 7 feet?

Mr. MARSCHALK. Not 7 feet; but I think I am pretty near correct when I say 4 feet.

Mr. ANDERSON. Four feet anyway, and it may have been more?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. Mr. Marschalk, in answer to my question about the effect of this high water in the lake on the life propagation of fish, you mentioned that in the Grand Traverse it had the effect of making the pike sick, and you mentioned what was the matter with them. Now, in answer to the gentleman who has just examined you, you said it did not affect the conservation of fish but made them move over into Canada. I wish you would explain that.

Mr. MARSCHALK. The Canadian water, owing to the rock-bound shores—

Mr. STEENERSON. In the first place, did you not say something about the pike in the Grand Traverse being affected in health?

Mr. MARSCHALK. They are.

Mr. STEENERSON. By the high water?

Mr. MARSCHALK. By the dirty water which is caused by the exceptional high stage of water.

Mr. STEENERSON. Then, in answer to one of his questions, you said it had nothing to do with the conservation of fish life—this high water.

Mr. MARSCHALK. I did not understand his question in that way. I thought the gentleman wanted to know whether it had anything to do with the conservation of fish in regard to catching.

Mr. STEENERSON. Then this high water does have some effect on the life of the fish?

Mr. MARSCHALK. I dare say.

Mr. STEENERSON. They do not multiply as fast as if the water were clear?

Mr. MARSCHALK. I take it for granted that a sickly fish would not be able to propagate its species the same as a healthy fish would.

Mr. STEENERSON. How do you know anything about the fish being sick? Explain that, so we can understand it.

Mr. MARSCHALK. The yellow pike, the fish that we have been discussing, after it is taken out of the net and is chilled by ice, will stiffen. The gills are clear and red. In my former testimony I stated that yellow pike in 1905 under similar conditions to what exist this year—and if anything the waters of the Traverse were more dirty—within 24 hours after being packed in ice became limp and their gills slimy. I do not think they were fit food fish.

Mr. STEENERSON. So that condition did affect the health of the fish?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. You were asked above the value of the fishing plant at Oak Point and you mentioned \$10,000, did you not?

Mr. MARSCHALK. \$4,700 for the lands and \$2,000 for the buildings. The entire investment in lands, buildings, boats, and fishing rig stands a trifle over \$14,000 on my books to-day for that particular fishery.

Mr. STEENERSON. I am talking about the real estate. You bought out the other fishermen there and you operate the only fishery there now?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. Is there any additional value to that fishery? As it has been heretofore, there has been a suitable fishing ground in which to operate from those buildings.

Mr. MARSCHALK. A point of land lying between the Four Mile Bay and the Lake of the Woods is a very desirable piece of property for summer cottages.

Mr. STEENERSON. I am not talking about that. I want you to state whether or not if the high water should in the future destroy the fishing grounds that would have any effect upon your property; whether the privilege of fishing in those particular grounds has any value which would be taken away by the destruction of those grounds?

Mr. MARSCHALK. If the fishing grounds were nonproductive or we could not operate them except through a loss, the property would be of no value to me.

Mr. STEENERSON. You testified to that, but in addition to that is there not a value in the privilege of having the opportunity to fish in those grounds?

Mr. MARSCHALK. Certainly.

Mr. STEENERSON. That property would be also destroyed by destroying the fisheries. You would have to hunt for another fishing ground, would you not?

Mr. MARSCHALK. Yes.

Mr. STEENERSON. Possessing this property gives you the right to fish in these particular grounds?

Mr. MARSCHALK. That is right.

Mr. ROCKWOOD. How many different seasons in your whole experience as a fisherman on the south shore have you been affected by high water; more than two?

Mr. MARSCHALK. Not seriously. 1905 and 1915 are the only two years that I have ever noticed the waters of the Traverse as dirty as they are at the present time.

Mr. ROCKWOOD. How many years has the water been substantially at the present stage? I do not mean the highest stage.

Mr. MARSCHALK. Of course, the records will give that; but those years that stand out prominently in my mind as high-water years, probably owing to some destruction of my own property, were 1896, 1897, 1899, and 1900, when my entire fishery was wiped out, 1905, 1907, and this year.

Mr. ROCKWOOD. Those were high-water years, about seven or eight years.

Mr. MARSCHALK. Those stand out prominently in my mind.

Mr. ROCKWOOD. But in only two of those years has the quantity of fish been affected seriously, as I understand you? Is that right?

Mr. MARSCHALK. That is right.

Mr. ROCKWOOD. Do you know why fishing was affected in those two particular years and it was not in the others?

Mr. MARSCHALK. I do not mean to be understood as saying that in other years in which we have had a continuous stage of extreme high water that the fishing industry was not hurt, but it was not injured as materially as it was during those two years. The general supposition among our fisheries has been that years of low water is good fishing and years of high water rather poor. There was not a perceptible difference between the other years of high water as to good and poor fishing, but those two years were exceptionally poor seasons on the Big Traverse.

Mr. ROCKWOOD. With the exception of those two years, have the years from 1899 to the present been substantially as good as any similar series of years before?

Mr. MARSCHALK. For some kinds of fish, yes; others have become much scarcer; the sturgeon, for instance.

Mr. ROCKWOOD. The sturgeon became scarce because so many were taken?

Mr. MARSCHALK. They are not able to reproduce as quickly as other fish.

Mr. ROCKWOOD. But with that exception, the series of years from 1899 to the present has not been materially different from the series of years before.

Mr. MARSCHALK. I will say that since 1900 the fisheries have produced more yellow pike than in former years. I believe that kind of fish has increased gradually from one year to another.

Mr. ROCKWOOD. Assuming, Mr. Marschalk, that the water has been this year, on an average, a foot higher than in previous years, and that the extreme may be a little more than a foot higher, do you know how long it would take for the lake to adapt itself to the change and restore the fishing if that stage were maintained permanently?

Mr. MARSCHALK. I do not know. This year, if the weather had been exceptionally calm, the fishing would not have been as poor as it is. The wave action will stir up the muck and discolor the water.

Mr. ROCKWOOD. But if the level of the lake were actually increased, the lake would in course of time restore itself and become clear again, would it not?

Mr. MARSCHALK. That I could not say. I have seen the gradual encroachment of the lake on the shore line, and it keeps on increasing. Take it in township 163, range 33—all of it above 1,066 level. Probably since 1900, 50 or 60 feet have been carried away of that entire shore line.

Mr. ROCKWOOD. As I understand you, you think that all interests would be best conserved by maintaining the lake as nearly as possible at a uniform level, provided that level is the proper one?

Mr. MARSCHALK. Yes, sir.

Mr. ROCKWOOD. In other words, uniformity in itself is an advantage to all concerned?

Mr. MARSCHALK. There is no question about that in my opinion.

Mr. CAMPBELL. What is your fishing season, by months?

Mr. MARSCHALK. From the 15th of May to the last day of October.

Mr. CAMPBELL. Six and a half months?

Mr. MARSCHALK. Yes; practically the same as the Ontario law.

Mr. CAMPBELL. Is that season fixed by law?

Mr. MARSCHALK. Yes, sir; by law.

Mr. CAMPBELL. That is also about as long as you could work, owing to ice conditions, is it not?

Mr. MARSCHALK. We could probably put in our nets earlier than that during the time that the yellow pike would spawn, but that would not be a desirable condition. We do not want to kill off the fish.

Mr. CAMPBELL. By the middle of May the ice has not been out very long?

Mr. MARSCHALK. The ice does not go out until about the 27th of May.

Mr. ANDERSON. The yellow pike is what we know as pickerel?

Mr. MARSCHALK. Yellow pike-perch is the scientific name for them.

Mr. POWELL. Is no effort being made to restock?

Mr. MARSCHALK. Yes; I have gotten about three and a half or four million whitefish from the United States and planted them. The Dominion Government hatchery at Kenora has a capacity of about 90,000,000 and hatched about 62,000,000 or 63,000,000 of whitefish last

fall and a similar number of dory, pickerel or pike. This spring I have some 30,000,000 of yellow pike spawning.

Mr. POWELL. Do you know how many have been planted on our side?

Mr. MARSCHALK. About three and a half or four million of whitefish.

Mr. POWELL. Are they propagating only the whitefish?

Mr. MARSCHALK. Whitefish and yellow pike.

Mr. POWELL. What are they propagating here in the United States?

Mr. MARSCHALK. They propagate the others; but only being able to get a limited quantity the yellow pike have steadily increased from one year to another, and the whitefish have been very slow. I thought it was preferable to take whitefish instead of yellow pike.

Mr. CAMPBELL. How long has that been going on—the furnishing by the Government of fish?

Mr. MARSCHALK. I think the first plant I made was in the spring of 1911. At the next Congress an effort will be made to get an appropriation from the United States Congress for a hatchery on this side.

Mr. STEENERSON. Will you state whether or not the privilege of fishing opposite the shore where any person may be located is one granted by license from the State of Minnesota?

Mr. MARSCHALK. It is by license, but the riparian ownership does not give you any preference in location.

Mr. STEENERSON. But these licenses that you hold there are granted by the State of Minnesota?

Mr. MARSCHALK. They are granted by the State game and fish commission of Minnesota.

Mr. STEENERSON. At what rate?

Mr. MARSCHALK. \$25 per net.

Mr. STEENERSON. How many nets have you there at Oak Point?

Mr. MARSCHALK. Twenty nets up the Rainy River at Oak Point.

Mr. STEENERSON. That is \$500 a year?

Mr. MARSCHALK. \$500 a year; yes, sir.

Mr. STEENERSON. That fee for the privilege of fishing in those waters is paid annually, is it?

Mr. MARSCHALK. That is correct, sir.

Mr. STEENERSON. That gives you the exclusive right to fish there?

Mr. MARSCHALK. In those particular grounds for which you get the license.

Mr. STEENERSON. They have laws and regulations as to how far they shall be apart and what time you shall put them in and what the size of the net shall be? It is all under the game and fish commission, is it not?

Mr. MARSCHALK. Yes, sir.

Mr. ROCKWOOD. Some one else might get ahead of you in their privilege next year? You have no assurance of holding it?

Mr. MARSCHALK. The way the law stands in Minnesota it is entirely left to the discretion of the commission as to who has preference in application. If the commission is fair, it will give the man who has held the license and has not broken the law—especially where he has his own land and buildings—the preference over any other applicant.

Mr. WYVELL. With reference to navigation, it is your idea that the channelways would fill with sediment more readily with a high level, say, at 1,062, or at a level, say, about 1,057? Would the channelways that you refer to in Rainy River, for instance, fill more readily at the higher level or at the lower level?

Mr. MARSCHALK. Considerably more readily at the higher level; practically none at the lower level.

Mr. WYVELL. As I remember your other idea with regard to the navigation being as well or better carried out at lower levels, it was that at the lower levels the difficult points would stand out?

Mr. MARSCHALK. They would be prominently above the water.

Mr. WYVELL. Where you could see them, and these at a higher level would not stand out. Is that correct?

Mr. MARSCHALK. Yes.

Mr. STEWART. You said that the mouth of the river would fill up more rapidly at a high level than a low level. Then how is it that the Warroad Harbor here had a bar across it before any dredging was done?

Mr. MARSCHALK. You understand that I was not here at the time. From what I have heard from the old-timers it was impossible for any time during the year prior to the construction of the roller-way dam to enter the mouth of Warroad Harbor, except with boats of narrow draft.

Mr. STEENERSON. Do you know whether the Warroad River is noted on the recent plates as a navigable stream or otherwise?

Mr. MARSCHALK. No; I could not say as to that.

Mr. STEWART. You stated a few minutes ago that if the water were maintained at 1,057.6 it would not cost anything for maintenance of works here at Warroad, did you not?

Mr. MARSCHALK. No. If the dirt taken out of the channel is thrown at the side of it, it would form a bar well above that level, and the natural bar would also be exposed or overflowed from 1 to 2 feet, and the force of the waves would break there. You might have to construct a bar at both ends of the channel at the farther end, leading into the lake, to keep it from flooding in.

Mr. STEWART. No maintenance would be necessary.

Mr. MARSCHALK. Very little, if any.

Mr. STEWART. You mean to say you do not think the mouth of the river would silt up again?

Mr. MARSCHALK. Not with proper protection at the mouth of the channel. You would have to pier its entire length to keep it from washing out. I have seen piers that were well built with rock which in a few years the ice would break. It would be an expensive piece of work to dredge those harbors.

Mr. TAWNEY. We would like to inquire whether or not it is the desire of the various interests represented here and the people to continue the hearing this evening? The commission will not leave here until to-morrow. We will have the whole of to-morrow to continue the hearing, but we do not know how much more testimony it is desired to put in.

Mr. BERKMAN. We will have time to get in the testimony to-morrow and also view the lands, I think. We have several witnesses we want to put on.

Mr. GLENN. Some of the gentlemen who represent the other side said they did not bring any witnesses. My understanding was that the farming interests and fishing interests would be heard at this meeting, but it does not seem to be the understanding of the gentlemen present.

Mr. Rockwood. I think that the notice that I received is plain, that we would not be heard at this meeting. It may be that I misunderstood it. This is the way the notice reads:

In order that the owners of the land on either border of the lake may have ample time to prepare and be fully heard on the question of the value of their lands that would be submerged at any of the levels indicated on the inclosed maps, and that the fishing and harbor and navigation interests may also be heard at the same time, you are hereby notified that the commission has fixed upon the following places and dates for that purpose. * * *

All other interests involved in the final conclusions of the commission in the foregoing reference will be given an opportunity to be heard at a time and place hereafter to be fixed by the commission when the engineering data in relation thereto is available.

I understood that we were directed not to bring any witnesses—that we would not be heard.

Mr. TAWNEY. I do not think that is a correct interpretation of the notice, Mr. Rockwood. The only other interests that are involved in the reference are the power interests, and the power interests can not be heard for the reason that the consulting engineers' report in respect to the regulation of lake levels and the conservation or impounding of storage waters for the purpose of maintaining a reasonable or desirable level of the Lake of the Woods is not complete. It was understood when this notice was given out that that part of the report would not be ready for distribution, and, therefore, the power interests would be heard as soon as the consulting engineers' report in respect to the regulation of lake levels and the studies of the storage capacity was prepared and ready to be submitted, because the power interests have no data upon which to prepare for any hearing at the present time. We had the maps and the data in respect to certain levels from the consulting engineers in time to give all these other interests about two months in which to prepare for the hearing. So far as the evidence in respect to the value of lands affected by any given level that the commission may hereafter recommend is concerned, it is a matter entirely for the commission to say whether they will hear evidence in addition to the evidence presented by the owners of the lands themselves. It is the duty of the commission to ascertain the value of the lands and I have understood that any person who desires to offer evidence respecting the value of lands that would be affected would have the opportunity to do it at this hearing no matter what other interests might do. But it is a matter entirely for the commission to say whether additional testimony in regard to land values will be received or not.

Mr. GLENN. Have you any evidence in regard to the value of land, Mr. Rockwood?

Mr. Rockwood. We have no witnesses that we could call offhand. At least I do not know of any. It may be that others do.

Mr. ANDERSON. So far as I am concerned, I understand that that notice gave an opportunity to all the land owners and persons

affected on the lake here to give their testimony at this hearing. I read the notice to mean that if, for instance, I as representing the Government in any particular interest wanted to put in evidence on any question that evidence was taken upon to-day that I would probably get an opportunity of doing it at a subsequent hearing.

Mr. TAWNEY. It was my understanding in the case of any persons who had evidence to offer bearing upon the questions that the commission is now investigating, that is questions with reference to land values and fishing interests and navigation interests, that it would be entirely competent for them to present such evidence at this time. The other interests that are referred to in the notice, of course, are limited necessarily to the power interests, because the power interests are the only ones mentioned in the reference that are not included in the notice.

Mr. ANDERSON. My impression was that we would be given an opportunity at any subsequent time before the commission closes this matter to produce evidence upon any of the questions before the commission, including the question of land values.

Mr. TAWNEY. I do not think that construction could be put upon it. The difficulty about that construction would be this, that the owners of land who may or may not be affected ultimately by the report of this commission would have no opportunity then to rebut or to cross-examine witnesses who may be presented to testify on the questions that are being considered at these particular hearings unless we come back here for that very purpose. In that event the witnesses would have to come here or to such other place as the commission may decide upon for a future hearing. It was the intention that the hearings, so far as testimony is concerned, would be closed at this time, and only the interests that are not to be considered and heard at this time would have an opportunity in the future to be heard when the engineering data were prepared and ready to be submitted to them.

Mr. ANDERSON. I am afraid, then, that there has been a serious misunderstanding on our part, because certainly we have taken no steps toward producing evidence to meet any of the evidence that has been put in here on the question, for instance, of land values. We may be able to produce some evidence on the question of navigation and also on the question of fisheries. We have not done so on the question of land values because the notice calls upon the owners and informs them that they will be given an opportunity of presenting their views.

Mr. MIGNAULT. Mr. Anderson, do you think the notice bears that construction? I must say that I was of Mr. Tawney's impression, that we were to hear pro and con everything that should be said as to the agricultural interests, the fishing interests, and the navigation interests, as also the harbor interests, so that when we would meet again the only point that would be left to be considered would be the power interests.

Mr. ANDERSON. That was not my understanding, nor was it the understanding of any of the gentlemen with whom I am associated, and I think reference to the notice will show that. I understood that the commission determined to have these sittings for the purpose of hearing evidence upon the question of land values alone, and sub-

sequently they decided that they might hear evidence with regard to the question of navigation and fishing interests.

Mr. TAWNEY. They were included because after first considering the interests that would be heard it was ascertained from the consulting engineers that the engineering data, so far as it related to any of these other subjects, would be available for the people to study in time to be prepared for this hearing. The commission then decided to include all interests where the engineering data was ready for distribution in time to give the people an opportunity to be heard, and that included all the interests except the power interests.

Mr. Rockwood. May I make a further suggestion? It may be that we could not bring any evidence. I suppose that any evidence we did bring would be in the nature of opinion evidence. It may be that the commission would think the evidence of actual transactions and of the actual condition of the land, etc., including the engineers' report, is so complete and so much more valuable than any other class of evidence that the commission would not feel as though it would be helped by further opinion. I assume from everything that the commission has said and done heretofore and from the public character of this investigation—it is not merely settling a suit between litigants, but it is a public investigation for the information of the people of both nations—I assume that if we have made a mistake in our construction of this notice, which we may have done, that if the commission thinks we might possibly be of assistance in reaching a right and just conclusion it might possibly, even of its own motion, ask us to begin now where we ought to have begun before, and that the commission would look for a way for the presentation of the evidence that would not seriously inconvenience anybody. It occurs to me that if this subject is considered between now and morning we might work out a way that would be fair to the landowners. I do not know whether the commission or a committee of the commission would want to come here to Warroad again, but it might be arranged that the commission or a committee of the commission should hear the evidence somewhere else, and the landowners could, perhaps, afford to send their attorney, as other interests have sent their attorneys, to the place of the meeting.

Mr. TAWNEY. I take it that if the commission should conclude that it could not upon the evidence that has thus far been presented reach a just or fair conclusion with respect to land values, it is entirely competent for the commission, not being bound by any other rules than that prescribed by the reference, to adopt any method that it might see fit to supplement what evidence has been given for the purpose of reaching that conclusion. If there is a public hearing to be given, it would be only fair that those who are represented here should have an opportunity of appearing and cross-examining witnesses, and that that opportunity should be as easy of access to the people who are represented here as possible.

Mr. STEENERSON. Mr. Chairman, I speak mildly when I say that I am very greatly surprised at counsel being unable now to understand the notice, and I want to appeal to the commission to put itself in our place as to the disadvantage or impossibility of meeting the situation adequately except at this time. Counsel refers to the farmers and counsel as being able to appear somewhere else. As a matter of fact, there is not a single farmer here that I know of for whom I

have appeared that has any counsel. I have appeared here as a matter of public duty. They have not any money to hire counsel and could not pay my expenses. The plan suggested would be placing these people at a very great disadvantage, and we are not to blame for the misunderstanding which is claimed to have taken place here. I did not understand it in that way.

Mr. TAWNEY. The notice has been published for a period of over two months, and if there had been any doubt in the minds of any persons interested as to what interpretation should be placed upon that notice the matter could have been very easily straightened out by communication with the commission on either side of the line.

Mr. MAGRATH. Mr. Anderson, as a member of the Canadian section of the commission and speaking to you as a Canadian representative here, I do not think your remarks are entitled to any consideration, because I think we made it perfectly clear that the question of the value of these lands would be taken up and considered at this meeting. I do not think it would be fair to the other side to allow you to come forward at a later date.

Mr. ANDERSON. There is no intention to be unfair at all. I understand the view you take, but I think from a first reading of this notice I would very properly put upon it the construction we did. The notice says: "In order that the owners of the lands on either side of the lake may have ample time to prepare and be fully heard on the question of the value of their lands that would be submerged at any of the levels indicated on the inclosed map." That is in order that they should be heard.

Mr. TAWNEY. That notice was sent to not only the Dominion Government, and the Federal Government on our side of the line, but also to the Provincial Government, to the State of Minnesota, and to all other interests that were concerned or could possibly be concerned in the ascertainment of the value of land to be affected; and that notice certainly implies that there will be taken up the whole question of the value of the land, which involves the affirmative as well as the negative side of the proposition as to what these lands are worth.

Mr. MIGNAULT. Does it not mean this, Mr. Anderson, that the whole case of the land owners would be considered at this meeting? Counsel are here to cross-examine witnesses, and counsel should be prepared to bring in witnesses to rebut what the witnesses of the land owners have said.

Mr. ROCKWOOD. What I have suggested in advance to the other counsel is this: That we undertake to supplement the information, not merely the opinions, but the information; to give more detailed information than we have seen yet with respect to the great mass of lands. The commission has heard the descriptions of three or four or a half a dozen farms. They embrace, we will say, on an average 300 acres. That would be 3,600 acres if there are a dozen of them. This commission has heard the description of 3,000 or 4,000 acres of land. Now, I suppose that within the possible area suggested by these maps there are many thousand acres. I do not imagine that the descriptions that have been presented here embrace 10 per cent of the total involved.

Mr. TAWNEY. On both sides the acreage is something over 89,000.

Mr. ROCKWOOD. We could not make any such preparation as we thought of making, and we could not give the information which we thought we might be able to give.

Mr. POWELL. It is easy for the people you represent, who are heavy moneyed corporations, and for the Governments to have meetings at such place and as often as they see fit, but here are a lot of farmers who are not wealthy men. They have been endeavoring for about 10 or 12 years to bring this matter to a culmination, and it was fully expected on the part of the commission, and I believe it was expected on the part of everyone of these men, that to-day would see the end of it so far as putting in evidence is concerned. For one I would be tremendously averse to having additional hearings anywhere except right here, because everyone of these men could have the privilege of being present to hear his case discussed, and he would be denied that privilege if we took up the matter in Ottawa or St. Paul or any other place.

Mr. ROCKWOOD. I thoroughly agree that the commission should be entirely just to these landowners. I think a way should be found that would be just to everybody and relieve us from our mistake, if we have made a mistake, and I suggested that we take until morning to discuss it.

Mr. STEENERSON. In reference to the number of witnesses called, I would say that I called as many as I thought we could get through with in the limited time, and I asked a few about their neighbors' land in order not to call more. Counsel seems to refer to the fact that all landowners were not called. We were afraid we would never get through in time. A great many of them could not come; they had not money enough to come here and pay their hotel bills. Many of those who were here were sent back because we thought we had put in all the evidence we would have time to put in and still put in evidence relating to the navigation and mercantile interests.

Mr. TAWNEY. We will now take a recess until 9 o'clock a. m., to-morrow, and when the commission reconvenes Mr. Steenerson can continue putting in his evidence. In the meantime some way can be worked out whereby everybody will be satisfied.

(The commission thereupon, at 6 o'clock p. m., took a recess until 9 o'clock a. m., Thursday, September 9, 1915.)

WARROAD, MINN., *Thursday, September 9, 1915.*

The commission met at 9 o'clock a. m., all the members being present, Mr. Tawney presiding.

TESTIMONY OF WILLIAM ZIPPEL, OF ZIPPEL, MINN.

(William Zippel, being first duly sworn, testified as follows:)

Mr. STEENERSON. How long have you lived at Zippel?

Mr. ZIPPEL. I have lived there with my family steadily over 27 years.

Mr. STEENERSON. How long have you been on the Lake of the Woods?

Mr. ZIPPEL. Since 1884. I lived for four years at Kenora, Canada.

Mr. STEENERSON. What has been your occupation during all that time?

Mr. ZIPPEL. Fishing and a little farming; fishing was the main thing. That is what I came here for. I wanted to get rich, but I didn't.

Mr. STEENERSON. You say you were in Canada before you moved permanently to Zippel Bay?

Mr. ZIPPEL. I didn't know if I was going to stay here, but afterwards I crossed the Lake of the Woods and found that there was some fish there, and I intended to make a commercial fish business out of it.

Mr. STEENERSON. Did you engage in any particular branch of the fishing business in those four years?

Mr. ZIPPEL. In Canada I had a hotel for a year.

Mr. STEENERSON. Did you observe whether or not there was any dam at the outlet at that time?

Mr. ZIPPEL. No; when I came there was no dam.

Mr. STEENERSON. It was in its natural condition?

Mr. ZIPPEL. Yes; the water run naturally.

Mr. STEENERSON. Was there more than one natural outlet?

Mr. ZIPPEL. Yes; there were two or three of them where the water went into the Winnipeg River. Then it goes down to Hudson Bay—I do not know where it goes.

Mr. STEENERSON. When did you first observe the Warroad River? About what year did you first observe it?

Mr. ZIPPEL. That was in 1885. I used to go back and forth once or twice every year.

Mr. STEENERSON. You observed it in 1885?

Mr. ZIPPEL. 1885 and 1886.

Mr. STEENERSON. What was the occasion of your coming up here? Did you have anything to call you here at that time?

Mr. ZIPPEL. No; but I wanted to see the lake. I tried fishing all over.

Mr. STEENERSON. What can you say about the condition of the Warroad River, then, where it empties into the lake?

Mr. ZIPPEL. When I came here I stopped at Buffalo Point; that is 8 miles from here. I had a sailboat and a guide and a cook with me. I traveled high at that time. We got into Warroad River here at Warroad, and the river went this way [illustrating].

Mr. STEENERSON. Crooked?

Mr. ZIPPEL. Crooked. We sailed part and then we couldn't sail any more. We got out and hauled the boat over. Some places we had to pull; there wasn't water enough until we got farther in the river, when there was about 8 feet and we could sail.

Mr. STEENERSON. It was shallow?

Mr. ZIPPEL. It was shallow outside; a sort of a bar. The water would raise a certain time in the year, either in the spring or in the fall. No steamboat could go into Warroad. There was no such thing as that, you know; that is, over the bar. When you were inside, of course, you could go.

Mr. STEENERSON. Inside the bar there was water enough for a steamboat to navigate?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. You do not understand the question. You say it was shallow there?

Mr. ZIPPEL. At the bar.

Mr. STEENERSON. But inside of the bar it was deep enough for a steamboat?

Mr. ZIPPEL. Of course, for an 8 or 10 foot boat.

Mr. TAWNEY. What was the depth of the water on the bar?

Mr. ZIPPEL. That would be 6 or 8 inches. When I got there first it was from 8 inches to a foot.

Mr. STEENERSON. That was before there were any dams at the outlet?

Mr. ZIPPEL. There were no dams. That was the condition before the dam was built.

Mr. STEENERSON. That was in 1885, when you first visited Warroad?

Mr. ZIPPEL. 1885 and 1886—well, every year.

Mr. STEENERSON. After that you visited it every year?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. At that time this was all an Indian reservation, was it?

Mr. ZIPPEL. Yes; all Indian reservation.

Mr. STEENERSON. There was no village here?

Mr. ZIPPEL. No; there were no white men near it at all.

Mr. STEENERSON. How far up Warroad River did you go at that time?

Mr. ZIPPEL. I went up, I should judge, maybe 2 miles from where you land now where the fish dock is.

Mr. STEENERSON. What time of year was it?

Mr. ZIPPEL. Once I was there in July and once I was there in June.

Mr. STEENERSON. Did you also go down to Zippel Bay on those trips?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. You were looking around the whole lake?

Mr. ZIPPEL. I looked around the whole lake for a location.

Mr. STEENERSON. Did you observe the level of the lake as compared with later years?

Mr. ZIPPEL. No; I did not pay attention to that at all.

Mr. STEENERSON. How was the Warroad River as to having a good current or being stagnant?

Mr. ZIPPEL. There wasn't much current in Warroad River; very little, unless it was a heavy rain, and then it would be. I wasn't there all the time. When I was there I never see very much current there.

Mr. TAWNEY. There could not be very much current with that sand bar at the outlet, could there?

Mr. ZIPPEL. No; the land was all low.

Mr. STEENERSON. So far as you know, in what year were dams put in at the outlet?

Mr. ZIPPEL. The first dam that I remember was in 1887 and 1888, that winter.

Mr. STEENERSON. You located in Zippel in what year?

Mr. ZIPPEL. In 1887 and 1888 I brought my family there.

Mr. STEENERSON. At that time did you make any observation as to the level of the lake with reference to any of the rocks there?

Mr. ZIPPEL. No; I never thought of that.

Mr. STEENERSON. When did you first see Zippel Creek?

Mr. ZIPPEL. In 1884.

Mr. STEENERSON. You know there is a big rock there?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. Did you make any observation with reference to that rock, which is now under water, I believe?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. Was it out of water at that time?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. That is what I wanted to find out.

Mr. ZIPPEL. Sure; I had two men with me, a guide and a cook, you know.

Mr. STEENERSON. No; I do not know. I am trying to find out.

Mr. ZIPPEL. We went up on that rock.

Mr. STEENERSON. Go on and tell us about it just as though we did not know anything about it.

Mr. ZIPPEL. I went up on that rock. It is formed just the same as this floor—flat.

Mr. STEENERSON. It is a large rock, is it not?

Mr. ZIPPEL. Where the flatness is it is about as big as half of this room. I had a little boat and we went up there. We guessed and talked about the country—what it could be.

Mr. STEENERSON. Do not put in so many of those details. Did you go up on the rock?

Mr. ZIPPEL. I took an oar, an 8-foot oar, you know, and took my rule out and measured it, and it was a good 5 feet out of water. I said, "That is a good idea; if I ever locate here it would be a good place to build a lighthouse on," and it would be, too.

Mr. STEENERSON. They have been talking about getting Congress to appropriate funds for a lighthouse there, have they not?

Mr. ZIPPEL. Nobody didn't talk about it except me.

Mr. STEENERSON. You are the originator of that idea?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. You should have given it more publicity and you might have a lighthouse there now.

Mr. ZIPPEL. Likely I would have a lighthouse on there if things had kept the way they were.

Mr. STEENERSON. How is that rock now?

Mr. ZIPPEL. It is under water now. You ask Mr. Paul Marschalk; he run his boat up there once.

Mr. STEENERSON. So the lake is higher now?

Mr. ZIPPEL. Well, I tell you that just in a few words. Since 1884, when I came there, and 1887, when I built there, and now, the water is just about nearly 4 feet higher as it was at that time.

Mr. STEENERSON. Has this higher water varied in the years since these dams were built? Has there been any range?

Mr. ZIPPEL. Sure. You see they built the first dam, and that dam didn't stand long. The Government gave them \$10,000 at Rat Portage to build that dam. D. L. Mather built it. He was in Ottawa, in Parliament, you see, and he gobbled those jobs.

Mr. STEENERSON. The dam was not very substantial?

Mr. ZIPPEL. No; it went out.

Mr. TAWNEY. Do you know what the dam cost?

Mr. ZIPPEL. \$10,000, so I heard. I didn't count the money.

Mr. STEENERSON. Then another dam was built?

Mr. ZIPPEL. Yes. That stood and stays yet, I guess. They can regulate this now just as they like.

Mr. STEENERSON. How is that?

Mr. ZIPPEL. They can raise the water and they can drop it. When they put stop logs in it raises generally an inch every 24 hours, and it falls in that way, too. They can regulate that and let it go. Understand there is those mills in Rat Portage. When they forget sometimes to take those stop logs out it raises too high, and to those people in Rat Portage, the mill men, I say, "Here, you take those stop logs out." I am pretty well acquainted in Rat Portage and have lots of friends there, too.

Mr. STEENERSON. Of course what you are telling us now is something that you have heard?

Mr. ZIPPEL. Something that I have heard; yes. They can let them go in 24 hours and they can run their mills again; that goes off so quick. I just want to explain to you that they can raise this dam just as they like.

Mr. STEENERSON. What effect has this high water in the Lake of the Woods had upon your business as a fisherman?

Mr. ZIPPEL. You see to stop the water there it backs up more and, of course, you know it drowns us out at high water.

Mr. STEENERSON. You may state whether or not there was a clean sandy beach around the lake before this high water.

Mr. ZIPPEL. Yes; mostly.

Mr. STEENERSON. Since there has been high water some of this muskeg has been washed in?

Mr. ZIPPEL. It washes back and back and keeps washing.

Mr. STEENERSON. Has that had any effect or influence upon the fish?

Mr. ZIPPEL. Sure.

Mr. STEENERSON. Well, explain that. We are not all fishermen here. Explain how that is.

Mr. ZIPPEL. For instance, this summer we had high water. We had it off and on. You see the water backs up and we will say here [illustrating] this is all dry land. The fish go so far as here. They have got their feeding ground the same as the rabbit or anything else; it doesn't make any difference, you know. This runs away up in the weeds. The fish get in there; they will go until they strike shallow water, and they get off their feeding grounds. They are floating around in the woods, you know, and we can not catch them.

Mr. STEENERSON. What effect does that have on their spawning and breeding?

Mr. ZIPPEL. It is just the same, you know—I will tell you; if you go sparking you go off and hide yourself a little and you know if somebody is after you you run away. It is just the same with the fish.

Mr. STEENERSON. Do you think it has had a bad effect on the conservation of the fish in the Lake of the Woods—this high water?

Mr. ZIPPEL. Sure it has.

Mr. STEENERSON. Was the fishing better in former years when the water was lower?

Mr. ZIPPEL. Yes; it was. That is, of course, taking it general, we had more fish at that time, especially sturgeon. We have just so many scale fish now, but the sturgeon is gone. But the high water, you know, affects this fishing in the spawning grounds generally. You see now if we have a medium water and the fish can go on their own grounds and spawn it would be better, but if high water comes it sweeps the whole country over.

Mr. STEENERSON. That hurts the spawn—to have that high water washing it?

Mr. ZIPPEL. Yes.

Mr. STEENERSON. How would it be if the lake were raised a few feet higher than it is?

Mr. ZIPPEL. Then we would move out here; that is all.

Mr. STEENERSON. It would destroy the business?

Mr. ZIPPEL. I will tell you. If the lake should be raised, if it comes up 2 feet higher, there are few people that can live in here.

Mr. STEENERSON. Very few people could live here at all?

Mr. ZIPPEL. No; Warroad couldn't stand there. They would have to go somewhere else. For instance, we organized the town of Zippel. I know of 23 settlers who left on account of high water since this has been opened. I do not want to say that the 23 that we had would have stayed there. You know some of them would move anyhow; you can't stop them; but out of the 23 there were about 16 good settlers who would stay, and they say that if the water goes down they have land that can not be beaten, no matter where you go.

Mr. STEENERSON. It is productive?

Mr. ZIPPEL. Yes; and if the water goes down we may come back; but, now, if it should raise—that is, understand, you needn't believe me at all, but I can take you and you can find out yourself, and I can get you Indians and some other people and swear to it; you needn't believe what I say.

Mr. STEENERSON. Well, go on and say it, anyway.

Mr. ZIPPEL. You see, the land is good. There is no use in talking, if the water should raise 3 feet more, you know, or 2 feet more, of course, we got to go. And those people farther back there are connected with this high-water business, too.

Mr. STEENERSON. They would have to go, also?

Mr. ZIPPEL. Sure. There are creeks there which come from Williams, for instance. That backs up. The water comes on, you see. If we had, now, this water—if this water would be down 3 feet, as it is at present—

Mr. STEENERSON. Lower than it is to-day?

Mr. ZIPPEL. Lower than it is; then the whole country is all right. The flour mill in Keewatin can go; that paper mill up there can go, and all the rest can go. We can fish and they can farm.

Mr. STEENERSON. Still, farmers are anxious for lower water than the fishermen, I understand.

Mr. ZIPPEL. Yes; of course.

Mr. STEENERSON. You are not an extremist?

Mr. ZIPPEL. What?

Mr. STEENERSON. You are not unreasonable in your demand? You are willing to take higher water than the farmers?

Mr. ZIPPEL. Well, I want to see them all live.

Mr. STEENERSON. There is a harbor of refuge at Zippel, as the engineer has described. How would it affect the Government works at Zippel if the water should rise higher than it is?

Mr. ZIPPEL. It goes.

Mr. STEENERSON. It would destroy it?

Mr. ZIPPEL. Yes; quick.

Mr. STEENERSON. It is already in danger, is it not?

Mr. ZIPPEL. It is in danger. A few more storms and a foot more high water finishes it.

Mr. STEENERSON. Then, according to your observation, this high water affects the whole drainage of both the ditches and rivers into the Lake of the Woods?

Mr. ZIPPEL. The whole country, by my estimation.

Mr. ANDERSON. Where did you live before you came to Zippel?

Mr. ZIPPEL. I lived in the States—in Wisconsin.

Mr. ANDERSON. What kind of business did you carry on in Wisconsin?

Mr. ZIPPEL. Well, I will tell you. I came there in 1866, and I fished and I had a clothing store and a grocery and provision store. Then I had a pleasure saloon.

Mr. ANDERSON. That is enough. I just wanted to know what your business was in a general sort of way.

Mr. ZIPPEL. Then I had a wholesale fish business in Chicago.

Mr. ANDERSON. You were a merchant and fisherman?

Mr. ZIPPEL. Yes; I tried to make money.

Mr. ANDERSON. You left Wisconsin and came up here with the purpose of trying to do better?

Mr. ZIPPEL. Yes; I intended to go to Lake Winnipeg, but there was a party there, so I went to the Lake of the Woods.

Mr. ANDERSON. You say that when you first came here the shores of the lake were largely sandy. There were sandy beaches?

Mr. ZIPPEL. Mostly; yes.

Mr. ANDERSON. At places, I suppose, there was no sand; there was marsh and clay and flat land?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. The land pretty generally was flat along the lake?

Mr. ZIPPEL. It is generally flat along the lake anyhow.

Mr. TAWNEY. Mr. Anderson, I do not know that you were here when he first testified, but he stated that he came from Kenora here.

Mr. ZIPPEL. Yes; I lived first in Kenora for four years and then I came here.

Mr. ANDERSON. What was the width of the sand beaches along the lake? I mean how much of the sand beaches were exposed that you could see? There would be something behind the sand beach?

Mr. ZIPPEL. Here would come sand and then woods, and it mostly comes woods.

Mr. ANDERSON. How wide would the sand beach be?

Mr. ZIPPEL. I would find maybe 1 rod and I would find 10 rods; and up so high as 15 rods.

Mr. ANDERSON. I suppose in many places the water would come around behind the sand beaches?

Mr. ZIPPEL. Sure.

Mr. ANDERSON. You spoke of the sturgeon having disappeared.

Mr. ZIPPEL. Yes; some put a tag on them and sent them to Chicago. They are all gone.

Mr. ANDERSON. You do not blame the high water for the disappearance of the sturgeon?

Mr. ZIPPEL. No.

Mr. ANDERSON. What kind of fish are those that go up in the woods and mix with the rabbits?

Mr. ZIPPEL. That is pike. Whitefish are very particular; they stay out in the deep water.

Mr. ANDERSON. They do not go into the bush?

Mr. ZIPPEL. Very seldom, unless there is clear water.

Mr. ANDERSON. It is principally what kind of fish that go in there?

Mr. ZIPPEL. It is what we call jackfish or pickerel. We Yankees call them pickerel and the Canadians call them jackfish.

Mr. ANDERSON. You say that the water at the present time is nearly 4 feet higher than it was when you first located here?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. Has it been coming up gradually?

Mr. ZIPPEL. It goes up and down. Since they got that dam in it has come up gradually, and you see by this dam they hold it just as they want it.

Mr. ANDERSON. How long did it take after the dam was put in for the water to rise 4 feet? When did it first touch the 4-foot higher mark than it was when you were here originally?

Mr. ZIPPEL. When they had that dam ready it came right off.

Mr. ANDERSON. Then, ever since the dam was completed and in operation the water has been 4 feet higher than it was before?

Mr. ZIPPEL. Not steady.

Mr. ANDERSON. But it did come up 4 feet and it goes up and down from time to time?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. Did I understand you to say that in your opinion if the water were to rise 2 feet higher it would cover all this district; cover Warroad, for instance?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. Which is higher, Zippel or Warroad?

Mr. ZIPPEL. There ain't much difference.

Mr. ANDERSON. Then, 2 feet in the same way would drown out Warroad if it would drown out Zippel?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. Is there any high land around Zippel?

Mr. ZIPPEL. Yes; farther back from the beach.

Mr. ANDERSON. What kind of land is that?

Mr. ZIPPEL. Oh, we have good land, just as good land as you find in the country.

Mr. ANDERSON. How far back would that high land be that you speak of?

Mr. ZIPPEL. That goes from 1 rod up to 5 miles. It goes gradually up.

Mr. ANDERSON. Do you mean that there is high land within 1 rod of the lake and that it keeps on going back until there is more at 5 miles back?

Mr. ZIPPEL. Yes; it raises higher and higher.

Mr. ANDERSON. There is a gradual rise?

Mr. ZIPPEL. Yes.

Mr. POWELL. Let us get that clear. He says ordinarily the land begins to rise a rod or two.

Mr. ZIPPEL. Yes; I say from a rod to 5 miles; it goes gradually up; that is, not all over. You find marshes, maybe, where it is flat again. For instance, you take it up 10 miles from the Lake of the Woods, the beach there has maybe 50 or 100 feet fall. You see generally it goes gradually up to that.

Mr. POWELL. But the way you have stated it I think maybe is incorrect. It is against yourself. There may be a flat extending for half a mile before it begins to rise at all.

Mr. ZIPPEL. Yes. Oh, I understand you.

Mr. ANDERSON. At any rate, there does come a point where the land is so high that the raising of the water another couple of feet would not touch it.

Mr. ZIPPEL. At some places.

Mr. ANDERSON. And that is good land.

Mr. ZIPPEL. That is good land.

Mr. ANDERSON. Is there much of that land?

Mr. ZIPPEL. Every foot of it is good.

Mr. ANDERSON. But I am speaking of the land that would not be affected by a rise of 2 feet of water.

Mr. ZIPPEL. It is good land.

Mr. ANDERSON. Is there much of it?

Mr. ZIPPEL. I have never measured it.

Mr. ANDERSON. Is there a considerable quantity of it?

Mr. ZIPPEL. Why sure.

Mr. ANDERSON. When you first came over here, Mr. Zippel, were there any marshes anywhere around?

Mr. ZIPPEL. Sure. They are there yet.

Mr. ANDERSON. There were then and there are yet lots of marshes?

Mr. ZIPPEL. Yes.

Mr. GARDNER. I think you stated, Mr. Zippel, that upon your first visit to Zippel Bay, by the measurements that you made upon the rock, it was 5 feet above the water.

Mr. ZIPPEL. Just about 5 feet at that time.

Mr. GARDNER. Since then when was the last time that you have seen the rock above the water?

Mr. ZIPPEL. I guess that was 1910, when we had this fire.

Mr. GARDNER. That is the last time that you saw it?

Mr. ZIPPEL. Yes; you could see the water coming over it.

Mr. POWELL. What time was it that you were there in 1884?

Mr. ZIPPEL. I came there on August 9, 1884, and stopped there four days.

Mr. POWELL. Was the water low then?

Mr. ZIPPEL. It was low that year.

Mr. POWELL. There were times that year when the water would be several feet higher?

Mr. ZIPPEL. Yes; but this was in August. It was in a dry season.

Mr. POWELL. When you saw the rock out of the water it was during the low-water season?

Mr. ZIPPEL. Yes; it was in the low-water season.

Mr. POWELL. How did the high water compare then, so far as your recollection goes, with the high water now?

Mr. ZIPPEL. It came high, but not near so high, you see, as it is now. The difference is before the dams we had high water. As I tell you, in August, 1884, when I stopped there and saw this rock so much out of water, then I went to Kenora and I stayed there. I seen the water nearly 3 feet higher in Kenora as it was in August. You see we had rain, but understand the high water would not hurt anything.

Mr. POWELL. It did not last long?

Mr. ZIPPEL. It lasted maybe a week or two or three and run off.

Mr. POWELL. But would it be just as high during the time that it was high as it is now?

Mr. ZIPPEL. No; I didn't see it that way.

Mr. TAWNEY. Mr. Zippel, you are familiar with the shore line between here and Zippel?

Mr. ZIPPEL. Yes.

Mr. TAWNEY. Is it not a fact that for a considerable distance on this side of Stony Point and on the other side that there is quite a high bank for a considerable distance along the shore line?

Mr. ZIPPEL. Yes; here and there there are high banks, but not much.

Mr. TAWNEY. I have been down there, and in going down I observed those high banks and I was wondering whether that was in accordance with your knowledge of the situation.

Mr. ZIPPEL. Oh, yes; it was partly high bluffs, you know.

Mr. TAWNEY. About how long are these high banks between here and Zippel? All told, what is the length of these high banks?

Mr. ZIPPEL. I don't know. Now, there is not so very real high banks.

Mr. TAWNEY. Well, six or eight feet.

Mr. ZIPPEL. About 10 feet or 15 feet, maybe. There is a rocky point there. That is a little high. That is, maybe, 10 to 15 feet.

Mr. ANDERSON. In what month was it that you came to Warroad? I think you said you paid a visit here in a sailboat in 1884.

Mr. ZIPPEL. That was in 1885.

Mr. ANDERSON. What month of 1885?

Mr. ZIPPEL. That was in June, late in June.

Mr. ANDERSON. You spoke of a bar at the mouth of the river.

Mr. ZIPPEL. Yes.

Mr. ANDERSON. Do you know what the width of that bar was? Could you give any general description of the bar?

Mr. ZIPPEL. No; but the bar, you know, ranges the whole flat out there; you might say half a mile.

Mr. ANDERSON. That is, half a mile out and half a mile wide?

Mr. ZIPPEL. It was pretty near a mile running out.

Mr. ANDERSON. About half a mile wide by a mile long?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. How deep was the water over that bar?

Mr. ZIPPEL. At places it was dry, but there was a channel which came out from the river and went crooked.

Mr. TAWNEY. I believe you previously testified that the water was 6 or 8 inches deep?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. What was the draft of your sailboat?

Mr. ZIPPEL. Ten inches. We had to haul it over dry ground at some places.

Mr. ANDERSON. Speaking of the high water, was the water as high this year as it was last year?

Mr. ZIPPEL. It was higher this year.

Mr. ANDERSON. How much higher was it this year than last year?

Mr. ZIPPEL. This year it was exceptional. It was a little higher than it was a couple of years back.

Mr. ANDERSON. Mr. Zippel, could you describe to me the condition of the height of the water during the last five years, year by year? Could you tell me, for instance, how many feet of water there were?

Mr. ZIPPEL. In regard to that, you know, it would not make a foot difference.

Mr. ANDERSON. There would not be a foot difference in any one year?

Mr. ZIPPEL. No; for instance, we have a north wind, and that will raise the water maybe a foot or 2 feet.

Mr. ANDERSON. How much will a very high north wind raise the water; 2 feet?

Mr. ZIPPEL. I have seen it when we had a blow where it raised 3 feet and 4 inches, when the wind went down again.

Mr. ANDERSON. How long did it remain at that height?

Mr. ZIPPEL. The Lake of the Woods is pretty near the same as the tide on the ocean. The current moves south and then it goes north again.

Mr. ANDERSON. It has been that way ever since you came here?

Mr. ZIPPEL. Yes; and will stay that way.

Mr. ANDERSON. Except for these variations caused by the wind, there has not been much difference, you say, in the height of the water during the last five, six, or seven years. Is that what I understand you to say?

Mr. ZIPPEL. Yes.

Mr. ANDERSON. Are there any particular years in the last 10 years which stand out as being years of particularly high water?

Mr. ZIPPEL. It has off and on, of course.

Mr. ANDERSON. Yes; but I understand you to say that one year it will be a little higher than in another year. I am speaking of exceptionally high water. Are there any years that stand out in your memory as being years of particularly high water?

Mr. ZIPPEL. No. Understand, since that new dam is built that water came up to that stage, and it has kept that way, with the exception of the wind.

Mr. MAGRATH. I would like to ask you a question about the winds. Is there any particular season for gales on the lake? Are there any particular months when you have high winds from a certain direction?

Mr. ZIPPEL. Certainly we have. You take it when the sun is past the line, what we call the equinoctial storms; we get them, and they are in the quarter of the west. We look for them. Sometimes they come early and sometimes they come later. Sometimes they go to Lake Winnipeg and stay there, and do not come here at all, and

sometimes they will be on the ocean or in China or somewhere and don't come here.

MR. TAWNEY. How is it in the spring of the year with respect to winds, Mr. Zippel? Do you have high winds at any time in the spring of the year?

MR. ZIPPEL. Off and on; yes, sir.

MR. TAWNEY. The extent to which the wind may raise the surface of the lake on the south shore depends on the direction of the wind and whether it is a high wind or just an ordinary blow?

MR. ZIPPEL. Sure. You see, sometimes the wind raises and comes harder, and sometimes it does not come harder.

MR. TAWNEY. Describe what is known as the Big Traverse. How much open water is there that the wind has to blow over?

MR. ZIPPEL. The widest, I guess, is about 20 miles.

MR. TAWNEY. Is the water in the Big Traverse deep or shallow?

MR. ZIPPEL. The deepest I ever found was 50 feet.

MR. TAWNEY. What is the difference between the effect of wind on deep water and on shallow water, so far as raising the level is concerned?

MR. ZIPPEL. When the wind comes it sets this water going. For instance, you only have a foot of water. You see, the water can not go down any more than a foot, and it can not raise a big sea; but if it as a hundred feet deep the water will work down and make a bigger sea.

MR. TAWNEY. You say the Big Traverse is about 50 feet deep?

MR. ZIPPEL. Yes; but there is deeper water on the Lake of the Woods. Now, we have about 20 miles across; that is clear water.

MR. TAWNEY. How long is the Big Traverse?

MR. ZIPPEL. That never has been found out.

MR. TAWNEY. You say it is 20 miles wide?

MR. ZIPPEL. The Lake of the Woods is 80 miles wide and the Big Traverse is 20 miles wide. Then come the islands. Some claim there are ten thousand or a hundred thousand islands in the Lake of the Woods. I never counted them and I know nobody else did, but you can see nothing but islands. They have 60 miles in the Lake of the Woods which belongs all to Canada. I guess the Lake of the Woods is a hundred miles long; but that goes away in the east, and nobody has ever found the end there.

MR. ANDERSON. Where are the worst storms on the Lake of the Woods? I mean where does it kick up the most fuss with the water?

MR. ZIPPEL. That is where the water is.

MR. ANDERSON. That is on the Big Traverse?

MR. ZIPPEL. That is on the Big Traverse; that is, one end is the same as the other.

MR. ANDERSON. What is the average depth of the water in the Big Traverse?

MR. ZIPPEL. Fifty feet.

MR. ANDERSON. I thought you said 50 feet was the deepest.

MR. ZIPPEL. That is all that I found the deepest.

MR. ANDERSON. If the deepest water is 50 feet, what would be the shallowest?

MR. ZIPPEL. The average would be, maybe, 30 or 35.

MR. POWELL. What is the prevailing wind in the summertime?

Mr. ZIPPEL. We get mostly southeast and easterly winds.

Mr. POWELL. Would that be off the shore or on the shore?

Mr. ZIPPEL. That would be off the shore.

Mr. POWELL. What is the course of the shore along here?

Mr. ZIPPEL. You know where Kenora is?

Mr. POWELL. Yes; but do not go up there; keep down here.

Mr. TAWNEY. Are these winds away from the land?

Mr. ZIPPEL. Away from the land, yes.

Mr. POWELL. To use your expression, does it blow offshore or on-shore when it blows easterly?

Mr. ZIPPEL. It blows offshore.

Mr. TAWNEY. What wind blows offshore?

Mr. ZIPPEL. The north wind.

Mr. TAWNEY. When does the north wind blow heavy, in the fall?

Mr. ZIPPEL. In the fall.

Mr. TAWNEY. You have very little north wind in the summertime, I suppose?

Mr. ZIPPEL. Not so much.

Mr. TAWNEY. When it does blow from the north it is not heavy, I suppose?

Mr. ZIPPEL. Well, sometimes it is.

TESTIMONY OF HELEC CLEMENTSON.

(Helec Clementson, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. CLEMENTSON. At the mouth of Rapid River.

Mr. STEENERSON. On the Minnesota side?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Are you on the north or south side of the Rapid River?

Mr. CLEMENTSON. My land is on both sides of the river.

Mr. STEENERSON. Where is your house?

Mr. CLEMENTSON. The house is on what I call the west side, Government lot No. 3.

Mr. TAWNEY. Where is that shown?

Mr. MEYER. The mouth of Rapid River is not shown on our maps. It is a tributary of Rainy River.

Mr. STEENERSON. I have here the drainage survey of the ceded Indian lands, made by the Geological Survey in Washington, and the report on the survey gives the levels of all these lands; they are marked, and also the levels. I offer it in evidence. This shows clear up to International Falls. It shows the whole shore of the Lake of the Woods, so far as Minnesota; and I might explain that when we spoke yesterday of ceded Indian lands, which you have to pay \$1.25 an acre for and live on five years, this land was some of the public lands that the Indians had ceded without any conditions, where they took free homesteads. That is public domain.

(Exhibit D.)

Mr. TAWNEY. You want the report in, too?

Mr. STEENERSON. Yes.

(Report marked "Exhibit E.")

Mr. STEENERSON. Will you point out Rapid River on this map?

Mr. CLEMENTSON. Here it is, marked with a cross.

Mr. STEENERSON. How many miles above the mouth?

Mr. CLEMENTSON. About 20 miles.

Mr. STEENERSON. There seem to be two parts?

Mr. CLEMENTSON. That is the one part, which runs south—

Mr. STEENERSON. The Rapid River has two branches; one running south into Koochiching County, and the main branch runs into Beltrami County.

How long have you lived at the mouth of Rapid River?

Mr. CLEMENTSON. Since the 15th May, 1896.

Mr. STEENERSON. How long have you lived at that place?

Mr. CLEMENTSON. Since the 15th May, 1896.

Mr. STEENERSON. You took a claim there?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. How many acres? Quarter section?

Mr. CLEMENTSON. Not quite; 159.5.

Mr. STEENERSON. You may give the Government description of your land.

Mr. CLEMENTSON. Lots Nos. 3 and 4 in the south half of the south-east part of section 12, township 160, range 30.

Mr. STEENERSON. How far is your house from the banks of the Rainy River?

Mr. CLEMENTSON. Well, from what we term the Rapid River, the house is about 250 feet.

Mr. STEENERSON. What business have you been engaged in? Anything else but farming?

Mr. CLEMENTSON. Farming and lumbering and sawmilling.

Mr. STEENERSON. How much have you got under cultivation?

Mr. CLEMENTSON. About 55 or 60 acres.

Mr. STEENERSON. Have you observed the level of the Rainy River at that point since you have been there?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. What is the difference since you have been there, as to the level?

Mr. CLEMENTSON. It varies with the different seasons; some years higher and other years lower.

Mr. STEENERSON. Is it high now?

Mr. CLEMENTSON. Yes; not as high as it was here in May.

Mr. STEENERSON. Last May it was high?

Mr. CLEMENTSON. Very.

Mr. STEENERSON. Was that the highest you have seen it?

Mr. CLEMENTSON. With one exception.

Mr. STEENERSON. When was that exception?

Mr. CLEMENTSON. 1897.

Mr. STEENERSON. I thought you said you came here in 1906.

Mr. CLEMENTSON. In 1896.

Mr. STEENERSON. And that is the only time that the Rainy River at your point has been as high as it was last May?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. How much higher was it last year than the ordinary height?

Mr. CLEMENTSON. Oh, about 2 feet or better.

Mr. STEENERSON. How is the land along there with reference to the elevation as being affected or not affected by the——

Mr. CLEMENTSON. Where I have got the mill is where what land I have is affected by the high water.

Mr. STEENERSON. Your land was affected by the high water?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. How much has it been flooded this year—submerged, or injured?

Mr. CLEMENTSON. My lumberyard was practically all under water, with the exception of a few rods right where the mill stands.

Mr. STEENERSON. Anything else?

Mr. CLEMENTSON. No; not of the farming lands.

Mr. STEENERSON. Are there any farming lands submerged along the Rainy River where you are acquainted by this high water this last year?

Mr. CLEMENTSON. No.

Mr. STEENERSON. It does not affect them?

Mr. CLEMENTSON. Generally high banks.

Mr. STEENERSON. Their banks are high?

Mr. CLEMENTSON. Generally.

Mr. STEENERSON. What business is affected by this high water there, if any?

Mr. CLEMENTSON. Well, it affected me in my lumberyard.

Mr. STEENERSON. And would affect you if it came high again?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Is that the first time that that has been flooded?

Mr. CLEMENTSON. Since I put the mill in these seven years ago, this is the first time.

Mr. STEENERSON. And were you injured, damaged?

Mr. CLEMENTSON. Well, to a certain extent. I had a lot of extra work to do. I put boom timber——

Mr. STEENERSON. If that should be raised still higher, would you be injured then?

Mr. CLEMENTSON. It would put me out of business at that place.

Mr. STEENERSON. Well, what would be the damage. It would not affect anything but your lumberyard, would it?

Mr. CLEMENTSON. The mill would have to be moved.

Mr. STEENERSON. Can you place any figure on it?

Mr. CLEMENTSON. The investment in the mill is \$9,800.

Mr. STEENERSON. What is the value of your mill?

Mr. CLEMENTSON. \$9,800.

Mr. STEENERSON. And does that include the yard?

Mr. CLEMENTSON. No.

Mr. STEENERSON. The yard is extra?

Mr. CLEMENTSON. Yes. At the present time I have about 3,000 feet of lumber.

Mr. STEENERSON. But I mean the ground; what is the area?

Mr. CLEMENTSON. It is about 7 acres.

Mr. STEENERSON. What is the value of that 7 acres, speaking of it as land or lumberyard?

Mr. CLEMENTSON. I do not know; I could not——

Mr. STEENERSON. You could not place a value on it?

Mr. TAWNEY. That is not your home, the lumberyard, is it?

Mr. CLEMENTSON. No; I live on the top of the hill, on dry land.

Mr. STEENERSON. Your home is not affected by this?

Mr. CLEMENTSON. No.

Mr. GARDNER. Did you ever know the mill site to be flooded before you placed the mill there?

Mr. CLEMENTSON. It was in 1897.

Mr. POWELL. How much higher this year was the water than at ordinary high pressure at the mill?

Mr. CLEMENTSON. About $2\frac{1}{2}$ or 3 feet higher.

Mr. POWELL. Was the present season not one of the wettest seasons that has been known for a long while in this region?

Mr. CLEMENTSON. Possibly, but not as wet as 1897.

Mr. POWELL. That is a long while ago; it has been an exceptionally wet season?

Mr. CLEMENTSON. Yes.

Mr. POWELL. What would you attribute high water there to? Would you attribute it to the larger amount of water that is coming down Rainy River or to the backing up of water from Rainy Lake?

Mr. CLEMENTSON. Both together.

Mr. STEENERSON. Both together, both the backing up and the flowing in?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. What do you mean by backing up?

Mr. CLEMENTSON. If the lake level was lower, the freshet would have a chance to empty out Rainy River much faster, consequently not hold it so high.

Mr. STEENERSON. Do you know what the difference in the level at your place, the mouth of the Rapid River, in Rainy River—between there and the lake, Four Mile Bay?

Mr. CLEMENTSON. About 10 or 12 inches.

Mr. POWELL. It is a very sluggish river?

Mr. CLEMENTSON. That varies, of course, with the different stages of water there.

Mr. TAWNEY. How far up from the mouth of Rainy River do you say Rapid River is?

Mr. CLEMENTSON. Practically about 20 miles.

Mr. MIGNAULT. Is that about Long Sault Rapids?

Mr. CLEMENTSON. About half way up.

Mr. STEENERSON. Are you acquainted with the Sault Rapids?

Mr. CLEMENTSON. Slightly; I have been through it.

Mr. STEENERSON. Do you know whether the rising of the lake level has any influence up there at the Sault?

Mr. CLEMENTSON. Well, I naturally figure it that way, because there is not over a foot of fall between Rapid River and the foot of the Sault Rapids.

Mr. STEENERSON. There is about a fall of a foot between the Sault Rapids and Rapid River?

Mr. CLEMENTSON. Just about.

Mr. STEENERSON. And just about 11 inches to the lake?

Mr. CLEMENTSON. Yes; practically. Take it from the mouth to Long Sault Rapids, about 22 or 24 inches.

Mr. MIGNAULT. From Rapid River to the Lake of the Woods you say about 11 inches fall?

Mr. CLEMENTSON. Yes; 10 to 12. It varies according to the different stages of the water.

Mr. POWELL. Outside of yourself and your mill site and lumber yard, have you heard any complaints this last year of the water affecting people in that vicinity?

Mr. CLEMENTSON. No; not up there.

Mr. POWELL. Have not heard any complaints up in that region?

Mr. CLEMENTSON. No.

Mr. POWELL. You are the only case where you know the land was disastrously affected?

Mr. CLEMENTSON. Yes.

Mr. ANDERSON. How is the water now as compared with what it was when it was highest this year?

Mr. CLEMENTSON. It is about 16 or 18 inches lower.

Mr. ANDERSON. Sixteen or 18 inches lower now?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Are you acquainted up in Warbonica?

Mr. CLEMENTSON. A little.

Mr. STEENERSON. Do you know if the farm lands up there have been affected by the high water?

Mr. CLEMENTSON. I have not been down there this summer.

Mr. STEENERSON. Well, were you there before?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. What did you see?

Mr. CLEMENTSON. More or less lowland there on Wabonica Creek.

Mr. STEENERSON. Was that creek backed up?

Mr. CLEMENTSON. I should say it was with this stage of water.

Mr. GLENN. You have not been there since the high water?

Mr. CLEMENTSON. No.

Mr. GLENN. When were you there?

Mr. CLEMENTSON. Two years ago.

Mr. STEENERSON. 1913?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Was it not high water then?

Mr. CLEMENTSON. Not as high as this year.

Mr. STEENERSON. How high was it?

Mr. CLEMENTSON. About a foot and a half lower.

Mr. STEENERSON. And still there were some farm lands there that were flooded?

Mr. CLEMENTSON. They were not flooded.

Mr. GLENN. He did not say that; you are leading.

Mr. STEENERSON. Yes; it is leading; but I did not suppose there would be any objection to leading.

Mr. GLENN. You should not lead.

Mr. STEENERSON. Well, that is all. It might be objectionable in the case of a partisan witness, but we get along faster with it.

Mr. TAWNEY. You are about 20 miles above the mouth of Rainy River?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. And your mill and lumber yard are on Rapid River?

Mr. CLEMENTSON. It is on the Rainy River, below the actual mouth of Rapid River.

Mr. TAWNEY. How long is the main branch of the Rapid River from its source down to its mouth? How much of a river is it in length?

Mr. CLEMENTSON. Well, by the way it runs we figure it is six days' paddling, or 150 miles.

Mr. TAWNEY. That river drains the country for 150 miles?

Mr. CLEMENTSON. That is the mileage on the river.

Mr. TAWNEY. Now, the other branch of the Rapid River is how long?

Mr. CLEMENTSON. I could not say.

Mr. TAWNEY. Is it 10 or 15 miles?

Mr. CLEMENTSON. Well, it is more than that. A straight line to the main branch of the rapids is 140 miles; but, taking the stream, you have 150 miles.

Mr. TAWNEY. Is it or is it not a fact that both branches of the Rapid River were higher this spring than they have been for some time?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. There has been a great deal more rainfall than usual?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. Was the flooding on your lumber yard due to the higher stage of the Rapid River or to the backing up of the Rainy River on account of the higher stage of the Lake of the Woods?

Mr. CLEMENTSON. Due to the high stage of the Lake of the Woods. The stage of water at my mill is not affected to any great amount by any amount of water coming out of Rapid River.

Mr. TAWNEY. Let us suppose that the stage of the water of the Lake of the Woods was a foot higher this year than last year, do you think that foot increases in the stage of the Lake of the Woods would extend up the Rainy River for 20 miles, so as to obstruct the outlet of Rapid River?

Mr. CLEMENTSON. Yes.

Mr. ANDERSON. How much higher was the water in Rapid River than it was last year?

Mr. CLEMENTSON. About a foot and a half.

Mr. TAWNEY. And the water in Rainy River was about 2 feet higher?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. There is a dam at the mouth of Rapid River, is there not?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. Is your place above or below it?

Mr. CLEMENTSON. Both above and below.

Mr. TAWNEY. How much of this lumberyard is above?

Mr. CLEMENTSON. All the lumberyard is below the dam.

Mr. TAWNEY. All the lumberyard is below the dam?

Mr. CLEMENTSON. So is the mill.

Mr. POWELL. Is it the dam in connection with your mill?

Mr. CLEMENTSON. Yes.

Mr. POWELL. What is the height and length of the dam?

Mr. CLEMENTSON. The dam is about 135 feet long, and carries a general head when we are sluicing along of somewhere about 11 feet.

Mr. POWELL. Is there a long sluiceway in the dam?

Mr. CLEMENTSON. Yes.

Mr. POWELL. Is there also a spillway in addition to that for the overflow?

Mr. CLEMENTSON. Yes.

Mr. POWELL. So that if the water in the Rapid River rises, the excess water passes right over the dam, or through the spillway, or through the sluiceway?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Where this dam is there is also a natural waterfall?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. How much is that natural waterfall?

Mr. CLEMENTSON. Ordinarily about 7 feet in a distance of 150 feet.

Mr. STEENERSON. So that before there was any artificial dam in there there was a rapids or waterfall?

Mr. CLEMENTSON. Rapids full of bowlders.

Mr. STEENERSON. And you put in a dam at the crest?

Mr. CLEMENTSON. At the foot, to carry the timber over without jamming up on the rocks.

Mr. STEENERSON. You do not use the water power?

Mr. CLEMENTSON. No.

Mr. STEENERSON. Just for sluicing?

Mr. CLEMENTSON. Just for sluicing.

Mr. STEENERSON. And there is a place in the dam there where there is a drop of water straight up and down—perpendicularly.

Mr. CLEMENTSON. Part of the spillway; yes.

Mr. STEENERSON. Have you observed where the level in the Rainy River and Lake of the Woods is shown by the waterfall there? Did you notice it?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Explain that, so that the commission will understand it.

Mr. CLEMENTSON. When the Rainy River rises, of course, the fall on Rapids River is diminished.

Mr. STEENERSON. If it rises a foot, the water fall diminishes a foot?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. And vice versa?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. There is a natural fall there?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. I understood you to say the dam was at the foot of the falls.

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. But the water falls over the dam?

Mr. CLEMENTSON. Yes.

Mr. TAWNEY. The height of the river does not affect the water that falls?

Mr. STEENERSON. Oh, yes; it must.

Mr. TAWNEY. But the dam is at the foot of the falls.

Mr. STEENERSON. But the water falls over. I understood from Mr. Berkman that that was one of the elements that made him notice it, that every time he saw the Rainy River rise the water fall was shorter. That was the element that reminded him of it. However, I do not care anything about it.

Mr. POWELL. It may be the back water piling up—the increased water over the waste weir. Was there any element of that kind suggested?

Mr. CLEMENTSON. When Rainy River is high, we certainly notice it in the sluice way running out logs.

Mr. POWELL. And when there is more water coming over, without regard to Rainy River at all, the back water also piles up?

Mr. CLEMENTSON. That will make a difference.

Mr. POWELL. And a big difference.

Mr. CLEMENTSON. Yes.

Mr. POWELL. And don't you know that where the flow of the river is increased the falls are obliterated altogether, and where there is a sufficient flow you do not see the rapids?

Mr. CLEMENTSON. Yes.

Mr. STEENERSON. Mr. Berkman says I have not grasped the idea.

Mr. BERKMAN. Yes; but Mr. Clementson has not understood the question.

Mr. POWELL. Then bring it out.

Mr. BERKMAN. You testified that you had built a dam there?

Mr. CLEMENTSON. Yes.

Mr. BERKMAN. And that dam raises the water; you have built it up just as high as the top of the rapids?

Mr. CLEMENTSON. Yes.

Mr. BERKMAN. So that the water does not fall over the rapids before it strikes your dam; that is, it does not come down?

Mr. CLEMENTSON. No, sir.

Mr. BERKMAN. And when the Lake of the Woods rises, it diminishes the fall of the water over your dam?

Mr. CLEMENTSON. Yes, sir.

Mr. POWELL. That is, if the back flow extends from the lake up?

Mr. BERKMAN. Yes.

Mr. ANDERSON. How far is it from your dam out to the mouth of the river—to the actual line of the Rainy River?

Mr. CLEMENTSON. Well, to the bay on Rapid River from the dam proper it is probably a distance of 60 or 75 feet; to the actual shore of Rainy River proper would be a distance of probably 1,000 feet. Rapid River Bay is about 700 feet wide.

Mr. ANDERSON. And how long?

Mr. CLEMENTSON. About 800 to 1,000 feet.

Mr. ANDERSON. Do I understand you to say the water was higher in 1897 than it is this year?

Mr. CLEMENTSON. Yes.

Mr. ANDERSON. How much higher?

Mr. CLEMENTSON. Probably a foot and a half.

Mr. ANDERSON. In the Rainy River?

Mr. CLEMENTSON. Yes.

Mr. ANDERSON. And I suppose in the Rapid River?

Mr. CLEMENTSON. The Rapid River at that time was higher yet.

Mr. ANDERSON. How is the water in the lumber yard now? Has it gone down?

Mr. CLEMENTSON. Yes.

Mr. ANDERSON. No water in the lumberyard now?

Mr. CLEMENTSON. No.

Mr. ANDERSON. When did you build your mill?

Mr. CLEMENTSON. Seven years ago.

Mr. ANDERSON. 1908?

Mr. CLEMENTSON. Yes.

TESTIMONY OF E. J. BOURGEOIS.

(E. J. Bourgeois, having been duly sworn, testified as follows:)

Mr. STEENERSON. Where do you live?

Mr. BOURGEOIS. Bermidji, Minn.

Mr. STEENERSON. What is your occupation?

Mr. BOURGEOIS. Surveying and engineering.

Mr. STEENERSON. Have you been employed by the authorities of the State of Minnesota in any capacity, or are you now?

Mr. BOURGEOIS. I am.

Mr. STEENERSON. What is it?

Mr. BOURGEOIS. I am employed as engineer on ditches, highways, and bridges, employed by the county for highways and bridges, and for the court, that is, working under the court on ditches.

Mr. STEENERSON. Under the laws the ditches are built as judicial ditches?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. Under the supervision of the judge?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. And you are employed by the court?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. This is in Beltrami County?

Mr. BOURGEOIS. Yes; Beltrami and Roseau.

Mr. STEENERSON. Can you state how many ditches have been constructed, or are under construction, emptying into the Lake of the Woods?

Mr. BOURGEOIS. I think that I have five projects that touch the Lake of the Woods; that is, the Lake of the Woods and the bays. I have three ditches that deal with the Lake of the Woods entirely.

Mr. POWELL. Have you a general plan of this?

Mr. BOURGEOIS. I have; I have profiles of them.

Mr. STEENERSON. You had better put them in after.

Mr. BOURGEOIS. I have my working plans; I am not prepared; I have just come up from the field.

Mr. STEENERSON. You were just telephoned for last night?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. Can you spare me this copy?

Mr. BOURGEOIS. No.

Mr. STEENERSON. Maybe you can use the drainage map?

Mr. BOURGEOIS. The drainage map gives my work, but it is not as detailed.

Mr. STEENERSON. You can submit a copy later to the commission.

Mr. BOURGEOIS. I will, in case the commission would require it.

Mr. POWELL. That would be satisfactory. These are your field notes?

Mr. BOURGEOIS. These are for progress; these are my notes.

Mr. STEENERSON. We will begin at the east side with the ditch; describe that.

Mr. BOURGEOIS. Judicial ditch 28.

Mr. STEENERSON. Show us on the drainage map where it is located.

Mr. POWELL. Is it numbered on that?

Mr. BOURGEOIS. No.

Mr. POWELL. It is not completed on there?

Mr. BOURGEOIS. I might spare a copy here to show you people, but it would have to be detailed out.

Mr. STEENERSON. You can detail them out now, I suppose?

Mr. BOURGEOIS. Yes; this district affected here touches Warbonica Bay and Four Mile Bay and Zippel Bay.

Mr. STEENERSON. We will begin with that ditch, judicial ditch 28. How long is it?

Mr. BOURGEOIS. There is 30 miles of 28; that distance is approximately 29 miles.

Mr. POWELL. Where does it enter the lake with regard to Zippel Bay?

Mr. BOURGEOIS. That is the south arm of Zippel Bay.

Mr. POWELL. That is where it enters?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. And it begins where?

Mr. BOURGEOIS. It just begins about 4 miles west of Baudette or $3\frac{1}{2}$ miles west of Baudette and runs north and westerly from Baudette.

Mr. STEENERSON. And its outlet is in Four Mile Bay?

Mr. BOURGEOIS. There is a branch outletting in Four Mile Bay and one into Warbonica Bay and one into the south arm of Zippel Bay.

Mr. STEENERSON. Does it not all empty into the Lake of the Woods?

Mr. BOURGEOIS. Yes; it all eventually empties there into the Lake of the Woods.

Mr. STEENERSON. This ditch has three outlets?

Mr. BOURGEOIS. Yes; and it also outlets into the Winter Road River, for that matter.

Mr. STEENERSON. How many outlets directly into the Lake of the Woods?

Mr. BOURGEOIS. One.

Mr. STEENERSON. That is the one in Four Mile Bay?

Mr. BOURGEOIS. That is the one in Four Mile Bay.

Mr. STEENERSON. The Warbonica empties into a bay or creek?

Mr. BOURGEOIS. Into a creek.

Mr. STEENERSON. Has this ditch been constructed or partly constructed?

Mr. BOURGEOIS. It is under way now, partly constructed.

Mr. STEENERSON. What part of it has been built?

Mr. BOURGEOIS. From that part running north from Baudette and west.

Mr. STEENERSON. Has it been constructed to the outlet?

Mr. BOURGEOIS. The Warbonica outlet has been constructed and they are on their way to the Four Mile Bay outlet now.

Mr. STEENERSON. You have not got down to the Four Mile Bay yet.

Mr. BOURGEOIS. Not yet.

Mr. STEENERSON. What is the next ditch?

Mr. BOURGEOIS. The next ditch connected with the Lake of the Woods is 24.

Mr. STEENERSON. Will you mark that?

Mr. BOURGEOIS. Yes; you will find the numbers on the lines.

Mr. MAGRATH. State briefly the general description of the ditch; that it leaves the Lake of the Woods so many miles east or west of Zippel, and that it runs in a southeasterly or southwesterly direction, so many miles; merely for the record.

Mr. BOURGEOIS. Using Zippel as a starting point for this, the ditch outlets into the Lake of the Woods about a mile north of Zippel and into Zippel Bay about $2\frac{1}{2}$ miles west and it outlets into the Lake of the Woods again at a point 7 miles west and 7 miles north of Zippel.

Mr. STEENERSON. How many miles is that project?

Mr. BOURGEOIS. That is 29.6 miles.

Mr. STEENERSON. What is the general direction of the Lake of the Woods?

Mr. BOURGEOIS. This ditch is located on a point that runs out into the lake.

Mr. STEENERSON. Does it run south or north?

Mr. BOURGEOIS. It runs north into the Lake of the Woods.

Mr. STEENERSON. It runs in a northerly direction from where it begins in the high country?

Mr. BOURGEOIS. North and west of this point.

Mr. STEENERSON. Twenty-nine miles?

Mr. BOURGEOIS. And six-tenths.

Mr. STEENERSON. What is the next ditch?

Mr. BOURGEOIS. That is judicial ditch No. 22; that is on Beltrami County and Roseau County lands.

Mr. STEENERSON. Mark it.

(Witness marks position of ditch.)

Mr. STEENERSON. How many miles?

Mr. BOURGEOIS. It is 13 miles long.

Mr. STEENERSON. Has that been built, or part of it built?

Mr. BOURGEOIS. It is about completed now, about a mile left——

Mr. STEENERSON. Where is that?

Mr. BOURGEOIS. That is on the extreme south end of the Lake of the Woods.

Mr. STEENERSON. It has been completed for how many miles from the Lake of the Woods?

Mr. BOURGEOIS. We had to leave the north end of it unconstructed at this time, due to the high water.

Mr. STEENERSON. What is the length of construction?

Mr. BOURGEOIS. The length of construction to date is about $10\frac{1}{2}$ miles.

Mr. STEENERSON. Are those all the ditches you had charge of?

Mr. BOURGEOIS. No; I have 12 of them.

Mr. STEENERSON. Emptying into the Lake of the Woods?

Mr. BOURGEOIS. The final outlet is into the Lake of the Woods. We empty some into Rapid River and Winter Road River farther up.

Mr. STEENERSON. How many of them have been constructed? Are these the only ones that have been partially constructed?

Mr. BOURGEOIS. Judicial ditch 6 has been completed for several years, and 16 is about completed.

Mr. POWELL. Better mark them on the plan, if there is any object in giving them.

Mr. BOURGEOIS. I will mark them on the plan.

Mr. STEENERSON. Give us a description of 6.

Mr. BOURGEOIS. This ditch 6, in reference to Zippel, is about 4 miles west; it outlets into the extreme west end of Zippel Bay, and then it is located 2 miles west and about 5 miles north and south from this point.

Mr. STEENERSON. How many miles long?

Mr. BOURGEOIS. Eleven miles long.

Mr. STEENERSON. Any other one?

Mr. BOURGEOIS. Then, judicial ditch 16; this ditch, located from Zippel—the outlet is about 3 miles south of Zippel and extends farther south on the east and west from this point; and the length of No. 16 is 17 miles.

Mr. STEENERSON. Have you got either the actual or the estimated cost of the construction of these ditches? Can you give that, beginning with the first that you mentioned?

Mr. BOURGEOIS. The first was 28. The contractor's price of cost of ditch No. 28 is \$55,942.

Mr. STEENERSON. And the next one?

Mr. BOURGEOIS. The contractor's price for ditch No. 24 is \$51,492.

Mr. STEENERSON. And the next?

Mr. BOURGEOIS. The contractor's price for judicial ditch 22 is \$25,252.

Mr. STEENERSON. And the next?

Mr. BOURGEOIS. I have not got the contractor's price for ditch 6, but it went quite a bit above the estimated cost, and the estimated cost was \$16,402.

Mr. STEENERSON. Give us the next.

Mr. POWELL. I think these should be tabulated for the purpose of reference.

Mr. BOURGEOIS. The contractor's price for judicial ditch 16 is \$20,974.

Mr. STEENERSON. How long have you been employed in this work?

Mr. BOURGEOIS. I think it is about four years since we started on this judicial proceeding and kept it up steadily.

Mr. STEENERSON. Was there any difference in the level of the Lake of the Woods when they first projected these ditches from what it is this season?

Mr. BOURGEOIS. Yes; there is a little difference.

Mr. MIGNAULT. How much?

Mr. BOURGEOIS. Probably a foot and a half or a foot. I think it is about three years I have been on these particular projects.

Mr. MIGNAULT. Did you ever take any levels?

Mr. BOURGEOIS. Yes; on all of them.

Mr. MIGNAULT. But with respect to the level of the lake, did you make any observation on the lake?

Mr. BOURGEOIS. Yes.

Mr. MIGNAULT. What observation? Instrumental?

Mr. BOURGEOIS. Instrumental observations; yes.

Mr. MIGNAULT. Did you make any instrumental observations?

Mr. BOURGEOIS. Yes.

Mr. MIGNAULT. With what?

Mr. BOURGEOIS. With a level.

Mr. MIGNAULT. Where?

Mr. BOURGEOIS. At all these points mentioned, the entire projects.

Mr. MIGNAULT. But with regard to the level of the Lake of the Woods at that time?

Mr. BOURGEOIS. Why, at each outlet, each project was all taken.

Mr. MIGNAULT. Can you give us the result of your observations?

Mr. BOURGEOIS. Well, they differed considerably wintertime and summer time. Most of these levels were taken during the wintertime. Most of all the work was done in the wintertime.

Mr. TAWNEY. Were these levels taken with a view of getting sufficient fall for a ditch to carry the water off into the creek?

Mr. BOURGEOIS. That was the purpose.

Mr. TAWNEY. That was the purpose of the levels?

Mr. BOURGEOIS. Yes.

Mr. GARDNER. That was the only purpose?

Mr. BOURGEOIS. Yes.

Mr. TAWNEY. In taking your levels for that purpose in the wintertime, did you, in locating the ditch and in determining the low level bottom of the ditch, take into consideration the fact that in the summer time the water would be higher, and did you plan the ditch so that it would have sufficient fall at the higher stages of the water, as well as in the winter?

Mr. BOURGEOIS. Yes; in a way I did.

Mr. TAWNEY. How much money did these ditches cost?

Mr. BOURGEOIS. I have about \$600,000 under way now.

Mr. TAWNEY. They were all planned for the purpose of carrying the surface water and draining the land into the Lake of the Woods?

Mr. BOURGEOIS. Yes.

Mr. POWELL. At a height with regard to the level at that time?

Mr. BOURGEOIS. No; not figured on the level at that time, because the water was away above what we could have operated——

Mr. POWELL. Did you at that time plan the level of the bottom of the ditch with reference to the high water in the summertime or just at the stage of water that you had in the wintertime?

Mr. BOURGEOIS. No; the project has nothing to do with the surface of the water at the time we took them. The water has been high——

Mr. POWELL. Did you not plan your ditches with reference to getting sufficient fall for a good drainage at ordinary stage of water in the Lake of the Woods?

Mr. BOURGEOIS. We planned them with the point in view that the Lake of the Woods would be lower.

Mr. MAGRATH. Lower than what?

Mr. BOURGEOIS. Lower than it was.

Mr. TAWNEY. Lower than it was in the wintertime?

Mr. BOURGEOIS. Yes.

Mr. TAWNEY. You planned the ditches and based the expenditure of all that amount of money on the theory that the water would be

lower, and therefore afford sufficient fall for drainage, than it was in the wintertime?

Mr. BOURGEOIS. Yes.

Mr. TAWNEY. You knew the water would be higher in the summer, did you not, than it was in the winter?

Mr. BOURGEOIS. No; I did not.

Mr. TAWNEY. Did you make any inquiry as to what the level of the lake was in the summertime?

Mr. BOURGEOIS. I knew what it was and I knew what it had been.

Mr. TAWNEY. Did you not plan your ditches with reference to the higher levels in the summertime rather than in the wintertime?

Mr. BOURGEOIS. No; we could not do that. Since I have been on this work the water has been extremely high, both winter and summer time.

Mr. TAWNEY. What was the level of the lake when you planned this, either at the Warroad gauge or the other?

Mr. BOURGEOIS. I think, with reference to where the water was at the time I took these observations—of course, this is on the one on 23—the elevation at that time was 1,162.

Mr. TAWNEY. One thousand one hundred and sixty-two.

Mr. BOURGEOIS. One thousand one hundred and sixty-two. I am using the same datum that that map has.

Mr. CAMPBELL. What is the difference between that and United States Geodetic?

Mr. BOURGEOIS. It is the same—I mean 1,062.

Mr. TAWNEY. And your ditches were planned with reference to a level of 1,062?

Mr. BOURGEOIS. No; we were planning on the normal stage of the lake, 1,060.

Mr. POWELL. Then your whole system is planned in view of, or as an adaptation to, whichever you may put it, an elevation of 1,060 of the lake?

Mr. BOURGEOIS. We were using that as a basis at the time.

Mr. POWELL. Your whole system, I understand, was adapted to that level. Your system was adapted to a level of 1,060 as the official system, when the water was at that level.

Mr. BOURGEOIS. No, sir.

Mr. POWELL. What are we to understand?

Mr. BOURGEOIS. The water at an elevation of 1,060 would have been in between the banks. I planned my ditches 2 to 3 feet lower than that.

Mr. POWELL. That still does not answer it. What level of the lake had you in contemplation when you planned your system?

Mr. BOURGEOIS. Not any at all. I could not take any.

Mr. MAGRATH. Did you have no governing elevation to work to?

Mr. BOURGEOIS. No.

Mr. MAGRATH. Give us a brief statement of how you designed one of the ditches, how you planned them. If you went into a territory fresh to locate a ditch, state, in a few words, how you proceeded.

Mr. BOURGEOIS. Why, of course, I got the levels for the system in the first place, and found what they were, and I established my grade line so as to carry the water on through so that it was below the level of the lake. I naturally wanted to find an outlet to outlet this water;

and, as I say, I used this as a basis, 1,060; that would give me a chance to keep my water between outlets on this flat land. As far as basing a system, I have no way of basing a system or plan as to what the level of the lake should be.

Mr. POWELL. Having in view your system, what did you contemplate as the level of the water of the lakes at the point of delivery of the lake?

Mr. BOURGEOIS. No contemplation at all. That is what I got and what I used.

Mr. POWELL. That was determined by some other people, not by you; is that what you mean?

Mr. BOURGEOIS. No; I used this as a base for ending my work. If I could not end at the lake, I would end wherever the fall would stop.

Mr. POWELL. Supposing the height of the lake was 1,066, and supposing that the water of the lake was 1,056, surely you would not have the same system for both of those levels, would you?

Mr. BOURGEOIS. We had to.

Mr. POWELL. You simply went, without any object in view, as to the height of the lake, and constructed a system?

Mr. BOURGEOIS. We have not constructed them.

Mr. POWELL. You are in process of construction?

Mr. BOURGEOIS. We can not construct them.

Mr. STEENERSON. Why?

Mr. BOURGEOIS. On account of the high water.

Mr. POWELL. To what level would the waters of the lake have to be reduced before you can complete your system?

Mr. BOURGEOIS. That is different. The Lake of the Woods would have to be 1,056.

Mr. MAGRATH. To accomplish what?

Mr. BOURGEOIS. To accomplish an outlet for these waters into the Lake of the Woods.

Mr. MAGRATH. All the drainage systems you have been referring to?

Mr. BOURGEOIS. Yes; I think so; this is 22; they will all come about the same.

Mr. MAGRATH. What fall do you give your ditches?

Mr. BOURGEOIS. We take whatever we get; it is about an average thing.

Mr. MAGRATH. What is the maximum fall that you can give?

Mr. BOURGEOIS. One foot to the mile.

Mr. MAGRATH. And how far back do you attempt to drain these lands?

Mr. BOURGEOIS. We go to the summits of them.

Mr. MAGRATH. Is that 4 miles back or 10 miles back?

Mr. BOURGEOIS. Some of them we have got 30 miles. I was asked as to the elevation below the level of the lake. We figured on about 3 feet below the level of the lake at that time for the elevation—well, about 5 feet.

Mr. STEENERSON. What effect upon these ditches will the maintenance of a high level, above 1,060, have? How will it affect this ditch?

Mr. BOURGEOIS. In the first place, we were not going to be able to construct them to the intended outlet or to the planned outlet.

Mr. STEENERSON. In order to have these ditches constructed so as to operate effectively for draining the country, you would have to have the level at what stage?

Mr. BOURGEOIS. One thousand and fifty-six.

Mr. STEENERSON. Some of these ditches have already been constructed and have been affected by the high water, have they?

Mr. BOURGEOIS. We have not been able to complete the construction of them.

Mr. STEENERSON. How does the high water affect them or the draining of them? I think you told me there was some silting; I want you to explain that, if there is any such thing?

Mr. BOURGEOIS. Well, it stops us from outletting our siltage and whatever would wash out the ditch.

Mr. STEENERSON. These ditches, if in operation, would all carry silt?

Mr. BOURGEOIS. Yes; sand and muskeg.

Mr. STEENERSON. What is the difficulty about that in this high water?

Mr. BOURGEOIS. We have no outlet for it. We have to simply dead-end it and let it go where it will over the flooded lands.

Mr. STEENERSON. What is the result if you empty it into the high water? Does it stay there?

Mr. BOURGEOIS. It stops there and backs up.

Mr. STEENERSON. And fills up the ditch?

Mr. BOURGEOIS. Fills up what we have dug.

Mr. STEENERSON. Has it operated that way already in some of these ditches?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. What approximately is the area to be drained by this proposed drainage system of these ditches in your charge?

Mr. BOURGEOIS. The contents of that map is about it.

Mr. STEENERSON. Not all of it?

Mr. BOURGEOIS. Just about all.

Mr. STEENERSON. Could you state approximately how many million acres?

Mr. BOURGEOIS. I could not say as to that.

Mr. STEENERSON. It is the most of the area of this drainage map?

Mr. BOURGEOIS. Yes; that map was provided for the purpose of drainage.

Mr. STEENERSON. But it is not all to be drained into the Lake of the Woods?

Mr. BOURGEOIS. Oh, no.

Mr. STEENERSON. Is not your drainage you are now speaking of into the Lake of the Woods?

Mr. BOURGEOIS. Oh, no; some of my work is outletting into Red Lake—

Mr. STEENERSON. I am speaking of the area to be served by the ditches emptying into the Lake of the Woods or tributaries of the Lake of the Woods. Can you give any idea of the acreage?

Mr. BOURGEOIS. No; I could not, offhand.

Mr. STEENERSON. It would be several hundred thousand acres; a good many townships.

Mr. BOURGEOIS. Yes; it would.

Mr. STEENERSON. Will you make an estimate of the area to be drained by the part of your drainage system that empties into Lake of the Woods and submit to us, so that we can submit it to the commission later?

Mr. BOURGEOIS. Yes; I could get that out for you.

Mr. STEENERSON. Send it by mail, and I will submit it.

Mr. BOURGEOIS. I have not these figures at hand. They are down at Bemidji.

Mr. STEENERSON. There is twenty-three thousand and odd acres in the township, and you can give an idea of about how many towns.

Mr. TAWNEY. Do all the lands in the towns drain into it?

Mr. STEENERSON. They dig lateral ditches.

Mr. BOURGEOIS. It is almost impracticable to get it from the data I have here.

Mr. STEENERSON. These ditches that you have under construction or proposed, so far as they are to discharge their waters into the Lake of the Woods or its tributaries—are they or are they not main ditches? Does your plan or does it not contemplate that they should be used by landowners and farmers for lateral ditches to empty into them?

Mr. BOURGEOIS. Well, they are, as far as they are planned now, but eventually there will be other systems designed for main outlets.

Mr. STEENERSON. What is that?

Mr. BOURGEOIS. They are, as far as planned now, but other projects will be—

Mr. STEENERSON. They are what?

Mr. BOURGEOIS. There are other projects under way that will probably outlet some of these.

Mr. STEENERSON. You have not answered whether they are or whether they are not intended to be main ditches, to which farmers or landowners adjoining can ditch or turn their laterals?

Mr. BOURGEOIS. They are.

Mr. STEENERSON. That is what they are intended for?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. Is it or is it not in contemplation in completing this project that the farmers will build on every quarter section line or something like that?

Mr. BOURGEOIS. It is; that is the intention.

Mr. STEENERSON. These ditches you are now constructing will serve as outlets for these farm laterals?

Mr. BOURGEOIS. They will; that is what they are constructed for.

Mr. STEENERSON. These are intended for main ditches?

Mr. BOURGEOIS. They are main ditches now.

Mr. STEENERSON. Are there still other main ditches in contemplation, to be turned into these further back from the lake?

Mr. BOURGEOIS. That is where we get mixed up; there is liable to be other ditches constructed.

Mr. STEENERSON. Both main and lateral?

Mr. BOURGEOIS. Both main and lateral. They may take these up, but as far as the project goes now these are the main outlet for the project.

MR. MAGRATH. I want to get in my mind the system you follow. Do you take certain areas south of the lake and carry your ditches down to the lake, or do you start from some governing elevation at the lake and develop your ditch system back into the interior?

MR. BOURGEOIS. When we first started out with these projects they were little local affairs like ditch 6—that contains but 11 miles—and since that time we are aiming to get into the watershed and clean it up. For instance, ditches 24 and 22 are in back of ditch 6 now, completing the work that 6 did not reach out for.

MR. POWELL. That does not touch Mr. Magrath's question. Did you go at it lobster fashion, or how?

MR. MAGRATH. I do not want to misrepresent you, but I gathered a moment ago that you take this territory in the interior and carry your water down and let it loose at the lake, and it may possibly do flooding there, no matter what the elevation of the lake would be?

MR. BOURGEOIS. We had to do that.

MR. MAGRATH. Is it not rather unfortunate for the people who happen to live along the lake shore to bring this water from the back and turn it loose upon them?

MR. BOURGEOIS. We do not turn it loose until we have to—until we meet the waters of the lake. At present we meet those conditions.

MR. TAWNEY. Mr. Meyer wishes to ask some questions.

MR. MEYER. I will wait until the examination is ended.

MR. STEENERSON. I want to call attention to the figures in the Government report about the level of the Rainy River at the foot of the Big Sault Rapids. Did you mark them this morning?

MR. BOURGEOIS. Yes; here are the four different points.

MR. STEENERSON. I want to call the commission's attention to the pencil marks made opposite the figures on pages 34 and 35 of this House Document No. 27. Here is an item, "Water surface at Birchdale Landing, July 27, 1907, 1,063.3." [Document filed as Exhibit E.] Is that near the foot of the Big Sault?

MR. BOURGEOIS. Just about a mile below it.

MR. STEENERSON. Approximately, what is the difference between that and the Rapid River mouth?

MR. BOURGEOIS. About 24 miles, I should judge.

MR. STEENERSON. And from that down to the lake?

MR. BOURGEOIS. It is about 23 miles from there to the lake.

MR. TAWNEY. What is the fall from the foot of the rapids down to Rapid River?

MR. STEENERSON. It seems to be about 2 feet.

MR. TAWNEY. From the foot of the falls to Rapid River, 1 foot and one-tenth.

MR. STEENERSON. And from Rapid River down to the lake?

MR. BOURGEOIS. Nine-tenths.

MR. STEENERSON. So that there was 2 feet fall in the river from a mile below Birchdale Landing to the lake?

MR. BOURGEOIS. Yes.

(Map of drainage system of Beltrami County received and marked "Exhibit F.")

Mr. MEYER. It might be useful to hear a statement that that document has been superseded by later statements, which have been issued by the Geodetic Survey, so that, in considering this matter, the revised levels should be used.

Mr. TAWNEY. Which map?

Mr. MEYER. That map. Those are not the finally adjusted elevations, so that the sea level we are using now is not identical with the sea level that is used in that document. It has been superseded.

Mr. STEENERSON. What is the difference?

Mr. MEYER. I can not give it to you offhand. It is all a matter of record, so far as our report is concerned.

Mr. STEENERSON. It is to be understood that although House Document No. 27, Sixty-first Congress, was based on a sea level that is different—

Mr. MEYER. Yes; the preliminary elevation.

Mr. STEENERSON. Preliminary or permanent, it is a different elevation from the sea level used by the commission of engineers here—

Mr. MEYER. Yes; it varies from a little less than half a foot to one foot and a quarter; that is my recollection.

Mr. STEENERSON. And allowance must be made for that in considering the elevations?

Mr. MEYER. Yes.

Mr. STEENERSON. So that the figures given for 1907 must be revised; is that it?

Mr. MEYER. Yes; have been revised.

Mr. STEENERSON. But that would not affect the question of the fall of the Rainy River from the foot of the Big Sault Rapids to the Lake of the Woods.

Mr. MEYER. Except as the adjustment varies.

Mr. STEENERSON. But if it shows a fall of 2 feet, it would be a fall of 2 feet, whether you take 1,075 as the sea level or less.

Mr. MEYER. And if the adjustment was half a foot here and a foot down there, it would be half a foot difference.

Mr. STEENERSON. Would it differ that much?

Mr. MEYER. I think so. I am speaking from recollection.

Mr. STEENERSON. Do you think that would increase the fall of the river or decrease it?

Mr. MEYER. The fall of the river varies radically with the amount of water flowing into it, with the variations of the lake level.

Mr. STEENERSON. Your contention is that the Geological Survey is not correct?

Mr. MEYER. I am not contending anything in particular, excepting I wanted to throw light on the situation. The figures of sea level datum that are being made a matter of record would not agree with the level datum, as stated in our report, being an adjustment.

Mr. STEENERSON. But it makes no difference whether it is a high sea level or low sea level used to determine the difference in the level of the river at one place and another, because if it would make 2 feet difference one place it would be the same at another. You have in mind that you testified that the difference in the fall in the surface of the rapids was 1 foot?

Mr. MEYER. At a particular day.

Mr. STEENERSON. And when the Geological Survey reported the fall was 2 feet, you explained it by saying they had a different sea level?

Mr. MEYER. Yes; and a different amount of water.

Mr. STEENERSON. And then you have a different level at the foot of Big Sault than at the lake?

Mr. MEYER. And there was a difference in the amount of water.

Mr. STEENERSON. Are you sure it was a different sea level that they used at the foot of the Big Sault and at the lake?

Mr. MEYER. Probably.

Mr. STEENERSON. Will you reduce that to an accurate statement?

Mr. MEYER. I will make it a matter of record.

Mr. STEENERSON. So that from that you conclude that when the Geological Survey men were at the foot of the Big Sault Rapids they had a different sea level, when they were measuring there, than when the same surveyors measured by the lake?

Mr. MEYER. No; I did not make that statement.

Mr. STEENERSON. But it made a difference, that their estimate of the fall of the river was not accurate?

Mr. MEYER. Perhaps we can clear it up; in all levels that are run, particularly in long lines, where the circuit is closed, there is a closing error, and that closing error must be distributed along the line. When that circuit is cut into several parts, the adjustment is made of the different portions. That results in a varying adjustment along the line, depending upon which portion of the circuit you are considering; so that, therefore, if there was a certain closing error, the distribution a short distance from the point of beginning might be a few tenths, whereas, around on the other side, it might be a foot, if it was a long circuit.

Mr. STEENERSON. I do not know anything more about it than when you started, but I want to know whether your contention is that when the Geological Survey found there was a fall of 2 feet from the foot of Big Sault Rapids to the lake, in 1907, that they were mistaken, and that if they had measured it with the correct basis they would have found it to be one foot fall.

Mr. MEYER. I mean to state that, if you take the same Geological Survey—that is, the report of the same department—their own figures will show a difference to-day from the figure given in 1907.

Mr. STEENERSON. But they measured it in 1907 and found a certain fall of the river, and it makes no difference whether you use one basis or not, the fall was there; unless you say they are mistaken in finding a fall of 2 feet, I do not see that it has any bearing.

Mr. MEYER. All I am concerned with is that the commissioners understand it.

Mr. STEENERSON. I think the commissioners can take care of themselves.

Mr. POWELL. Before you go to the next witness, I would call your attention to the fact that the engineers employed by the two Governments, respectively, and working jointly, have given as plate 125 in one of the exhibits, in evidence, this fact: That since 1893 down to 1913, the average natural fall—they computed the natural level—the average natural fall during nearly 70 per cent of that time was over 1,056, and that only for about something over 30 per cent was it be-

low 1,056, which you have taken as the basis of your whole system of drainage; that is, for 70 per cent of the time, the natural level would range above that which you took as the basis of your operations, and, furthermore, if you will examine closely, it reveals this fact, that during that 70 per cent of the time, the larger portion was in the months of August, September, and October.

Mr. BOURGEOIS. With what view are you bringing that up now?

Mr. POWELL. That your system would be adapted to what was an entirely unnaturally low level.

Mr. BOURGEOIS. Well, here is my position in this case; that if I can not empty it, or outlet my water out at the boundary line of the lake, I outlet farther back.

Mr. POWELL. On the land?

Mr. BOURGEOIS. Farther back on the land; I have to.

Mr. POWELL. Your idea was not to work from what you regard as the natural level up, to see what you could do when you got up to the interior, but to commence at the interior and draw the water down and let it go where you would make the disposition of it?

Mr. BOURGEOIS. I stopped my work when we met back waters from the lake; naturally, that is what we were doing. And if I could continue my work on, if the water had not been high, that would have been my elevation adopted for the system.

Mr. POWELL. Notwithstanding that, that elevation, during 70 per cent of the whole time, was below the natural level?

Mr. BOURGEOIS. I have data that gives me levels away below that for the Lake of the Woods levels.

Mr. POWELL. I would like to see them, because if you have data during that time, showing a lower level, I would very much like to have that, because it is an important point.

Mr. BOURGEOIS. I have record that Warbanica and River Baudette were creeks emptying into Rainy River, and now they are bays with 4 to 6 feet of water.

Mr. POWELL. Where is that data to be had?

Mr. BOURGEOIS. There are living witnesses to that effect.

Mr. POWELL. How far back do the data extend?

Mr. BOURGEOIS. When this Government survey was first made up in this territory.

Mr. POWELL. When was that?

Mr. BOURGEOIS. I do not know. The men are old men now.

Mr. POWELL. Had you this data, Mr. Meyer?

Mr. MEYER. Regarding the creeks?

Mr. POWELL. Yes.

Mr. MEYER. It is shown on our maps.

Mr. POWELL. You have taken it all into consideration?

Mr. MEYER. In what connection?

Mr. POWELL. In the endeavor to get at a natural level of the lake?

Mr. MEYER. I stated that as one of my arguments the other morning on the subject.

Mr. STEENERSON. Did you use the United States Government surveys in connection with this matter, to ascertain what the lake shore was, or the lake level—the plats?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. You said you took observations yourself?

Mr. BOURGEOIS. Yes; with levels.

Mr. MIGNAULT. Necessarily, United States levels?

Mr. BOURGEOIS. No, I got independent lines; I used the United States datum that compiled this map.

Mr. STEENERSON. Did you use also the original surveys 25 years ago?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. You had copies of the plats?

Mr. BOURGEOIS. Yes, and field notes.

Mr. STEENERSON. So that those field notes were consulted by you in determining what the level of the lake had been?

Mr. BOURGEOIS. The former banks of the lake—yes, I had that data with me.

Mr. STEENERSON. That was some of the data you used?

Mr. BOURGEOIS. Yes, that was my reason for extending it out to this level, because the boundary line was there at one time, and I expected it would come there again.

Mr. STEENERSON. In addition to this data and field notes, you say you consulted living witnesses that were there at the time?

Mr. BOURGEOIS. Yes; that is, men who made these surveys and were up there and did the work.

Mr. STEENERSON. You consulted the very men who made the field notes?

Mr. BOURGEOIS. Yes.

Mr. POWELL. Their data which you got had reference to the particular dates on which the survey was made?

Mr. BOURGEOIS. Yes.

Mr. POWELL. There was no data given daily throughout any particular length of time; it was simply their observation at the time the survey was made?

Mr. BOURGEOIS. That is the data that I used.

Mr. POWELL. That data, or conclusion of data, might have been several feet above or below what the level of the lake might have been on some other day of the year?

Mr. BOURGEOIS. That might have varied for all I know.

Mr. POWELL. All you took was the data given by the survey at a particular date?

Mr. BOURGEOIS. Yes. I used what we call the Government field notes to locate these surveys with.

Mr. POWELL. You mean by boundary the rim, the shore of the lake on that particular date?

Mr. BOURGEOIS. The meandered shore on that date; that is, the day they got it, or the day I got.

Mr. POWELL. The day they got it?

Mr. BOURGEOIS. I simply got a copy of the notes——

Mr. POWELL. And you know the marginal line or meandering line would vary from day to day throughout the year?

Mr. BOURGEOIS. Well, I was not depending or relying on that.

Mr. CAMPBELL. Would the field notes or plans of surveyors who surveyed the land 21 or 22 years ago show lake elevations?

Mr. BOURGEOIS. No, sir.

Mr. CAMPBELL. I thought you had worked that out from those notes and plans or plats?

Mr. BOURGEOIS. These Government surveys are generally references, witnessed by trees and posts; when they come to a lake shore like this, they would have what they call a meander corner; they stick in a post, and a reference on the post to trees marked, which established the assumed line of mean.

Mr. CAMPBELL. They do not show an elevation above ocean mean level for the inland waters?

Mr. BOURGEOIS. No.

Mr. CAMPBELL. Take at the shore line, the meander post or meander point—you trace your map from that?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. Following your shore line?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. Do I understand it was your own decision to take 1,056, or was that given you by instructions?

Mr. BOURGEOIS. That was more from instructions.

Mr. CAMPBELL. Have you brought those with you, or are they accessible?

Mr. BOURGEOIS. No, sir. It was just a matter of determining. The instructions were to dig ditches $4\frac{1}{2}$ or 5 feet deep, and when we got the elevations over the surface line and averaged the line for grade, that would give us about the depths.

Mr. CAMPBELL. The grade is about what on the average of these six ditches that you dug?

Mr. BOURGEOIS. About $4\frac{1}{2}$ to 5 feet below an average surface level.

Mr. CAMPBELL. What is the average fall per mile?

Mr. BOURGEOIS. The average fall per mile in this case was about 10 feet per mile.

Mr. CAMPBELL. If you run back from the lake, as you have in one or two cases, a distance of 11 miles, you will not get 110 feet, will you, the height that you go back?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. Is that fairly uniform going back from Zippel Bay? What numbers did you give?

Mr. BOURGEOIS. Twenty-eight, twenty-four, twenty-two, sixteen, and six.

Mr. CAMPBELL. What will be the fall or grade of 28?

Mr. BOURGEOIS. I have not the elevations of the source and outlets here, but that is about a general average per mile, 10 feet. There is some that may average only 2 or 3, and then you may get 10 or 12 or 15 the next.

Mr. CAMPBELL. You can not give me the fall in ditch 28?

Mr. BOURGEOIS. Yes; I can give it to you. For instance, by using that point of beginning I first described to you, the point of beginning—

Mr. CAMPBELL. Is that the one known as the Zippel?

Mr. BOURGEOIS. Well, 28 reaches within about 3 miles from Zippel, and it begins about 4 miles west of Baudette.

Mr. CAMPBELL. And is there another one that might be called the Zippel ditch?

Mr. BOURGEOIS. Twenty-four empties into Zippel Bay.

Mr. CAMPBELL. How far from Zippel?

Mr. BOURGEOIS. It empties about $2\frac{1}{2}$ miles west of Zippel's.

Mr. CAMPBELL. Take those two; I wanted to get the Zippel ditch; I am not sure which of these two it is?

Mr. BOURGEOIS. Well, 28, 24, 16, and 6 all touch Zippel Bay.

Mr. CAMPBELL. But I am talking of the two that are nearest to Zippel, the post office or village, 28 and 22; take 28 first; the outlet when completed will be at 1056?

Mr. BOURGEOIS. We can not get to 1056; we can not dig that deep.

Mr. CAMPBELL. You have to make the outlet some farther up?

Mr. BOURGEOIS. Yes. I think in 28 we are taking about 2 feet below the surface and quitting; we are doing that for the purpose of creating a kind of basement for the sediment to settle in it.

Mr. CAMPBELL. Are you proposing to make the excavation for that basin or simply to allow the ditch to terminate there?

Mr. BOURGEOIS. It is just a dead end there.

Mr. CAMPBELL. What is the width of the ditch there?

Mr. BOURGEOIS. About 14 feet on the top.

Mr. CAMPBELL. And about $4\frac{1}{2}$ deep?

Mr. BOURGEOIS. About 4 feet in these places.

Mr. CAMPBELL. What is the slope or fall for the first mile from the outlet you are going to adopt?

Mr. BOURGEOIS. Will we use 28 for that?

Mr. CAMPBELL. Yes; take 28, and take the first 5 miles, and we will not go any farther.

Mr. BOURGEOIS. I have to get that elevation connecting with another ditch. Supposing we use that ditch 24; that empties into the lake proper.

Mr. CAMPBELL. All right, take 24; that can be done without the difficulty that 28 presents.

Mr. BOURGEOIS. Twenty-eight connects with Zippel Bay and empties into Warbanica Bay. It is the same waters and same elevation. There must be 15 or 20 short sections in 28. It is going to be a rather long affair.

Mr. CAMPBELL. Take 24; that will be shorter?

Mr. BOURGEOIS. I have an outlet of 24 at an elevation of 1,061; that is my grade; I have an outlet into Zippel Bay at 1,061; that is the grade point.

Mr. CAMPBELL. Is that the top of the ditch?

Mr. BOURGEOIS. No; the bottom was 1,061.

Mr. TAWNEY. How far is that outlet from the lake, or how far up Zippel Bay or Creek is it?

Mr. BOURGEOIS. It is about $2\frac{1}{2}$ miles up Zippel Bay. This water is the lake level.

Mr. CAMPBELL. Where that comes into Zippel Creek is lake level?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. That is the same as if the creek had not been there and you had extended it to where the creek did exist?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. Take the first mile there?

Mr. BOURGEOIS. Take the first mile there, it is exactly $9\frac{1}{2}$ feet of a rise. Then we come to another section; I come into this with another section.

Mr. CAMPBELL. Another one falls into it?

Mr. BOURGEOIS. Yes; this will be complicated.

Mr. CAMPBELL. How much would the draining out of this ditch into Zippel Bay raise the level of Zippel Creek?

Mr. BOURGEOIS. It would not raise it any.

Mr. CAMPBELL. It would have no effect?

Mr. BOURGEOIS. No appreciable effect.

Mr. POWELL. Do I understand you, the point there coincides with the lake level at that particular outlet?

Mr. BOURGEOIS. Yes.

Mr. POWELL. So that particular ditch is based upon a level of 1,061?

Mr. BOURGEOIS. Yes.

Mr. POWELL. And not 1,056, like the others?

Mr. BOURGEOIS. No; this happens to be a high bank where we are outletting, while the other ones are flat banks.

Mr. CAMPBELL. So that the fall or slope for the first mile is going up; the slope for the first mile going up from that outlet is about $9\frac{1}{2}$ feet?

Mr. BOURGEOIS. It is $9\frac{1}{2}$ feet.

Mr. CAMPBELL. What would it be, about, for the remaining 4 miles? It is 14 altogether, but I wanted only 5 miles.

Mr. BOURGEOIS. Ditch 24 is 29 miles and six-tenths.

Mr. CAMPBELL. What is the slope for the next mile?

Mr. BOURGEOIS. Well, as I stated, it is short. We are outletting into the country there; that would not hardly bear on the fall of the country in the light that you are inquiring into.

Mr. CAMPBELL. This ditch 24 has several outlets?

Mr. BOURGEOIS. Yes; take the 28 or 29 miles, it is in a territory of about 9 square miles; it is included in that area.

Mr. CAMPBELL. And there are some outlets into creeks, and this one, at least, into Zippel Bay?

Mr. BOURGEOIS. Yes; this happens to be a branch.

Mr. CAMPBELL. This ditch will cost something over \$2,000 per mile?

Mr. BOURGEOIS. The total of it is \$51,000.

Mr. CAMPBELL. And that cost is assessed, according to your practice, against the lands benefited?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. Does the land benefited pay the whole assessment?

Mr. BOURGEOIS. No. I believe there is a special road assessment levied.

Mr. CAMPBELL. But that would be against the lands probably in another—

Mr. BOURGEOIS. It includes more territory.

Mr. CAMPBELL. The lands benefited by the ditching are those almost immediately fronting on each side of the ditch.

Mr. BOURGEOIS. Two miles on each side.

Mr. CAMPBELL. Are all those lands there capable of standing their assessment from their value? Do you know anything about the value of the lands through which these five ditches you have mentioned run?

Mr. BOURGEOIS. I do not.

Mr. CAMPBELL. Does the State contribute anything to the cost of the judicial ditches?

Mr. BOURGEOIS. Not any more than that they are assessed for it.

Mr. CAMPBELL. State lands?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. They pay their own share?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. And the United States does the same?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. Under a special act of Congress?

Mr. BOURGEOIS. Yes.

Mr. STEENERSON. United States lands are assessed the same as private-owned lands?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. I suppose, without that, belonging to the Federal Government, they would be exempt?

Mr. STEENERSON. Certainly. That is the first act of the kind ever passed in the United States.

Mr. CAMPBELL. Does that apply all over the States?

Mr. STEENERSON. No; just for these lands.

Mr. CAMPBELL. What is the slope to the other four ditches?

Mr. TAWNEY. How is this material?

Mr. CAMPBELL. I will close it off immediately.

Mr. BOURGEOIS. That is, the general slope of the land, either one way or the other, you rise about 10 feet to the mile; one time you may have to go cater-cornered to get it——

Mr. CAMPBELL. Back from the lake toward the height of land?

Mr. BOURGEOIS. Some cases we barely get the fall, while we more than make up for it when we get to the flat section.

Mr. CAMPBELL. You say these drains coming into the lake would carry out the silt and form what is analogous to a bar in a creek or river?

Mr. BOURGEOIS. That is what they are doing now.

Mr. CAMPBELL. And unless you get a very fortunate outlet that will happen in every case of a watercourse, whether artificial or natural, if there be silt in the current of the water?

Mr. BOURGEOIS. It will to a certain extent; yes.

Mr. KEEFER. I would like if you would explain this report, Exhibit E, so that I may understand it. It says: "Lake of the Woods, water surface, July 10, 1907, range of level between three and four, now about medium, 1,061.3."

Mr. BOURGEOIS. I am not responsible for that.

Mr. KEEFER. That would mean that some part of the year it would be one foot and a half higher and some part of the year one foot and a half lower. I want to know what it means.

Mr. STEENERSON. That is not his report.

Mr. KEEFER. I can not understand it. What would you expect that to mean?

Mr. BOURGEOIS. About an average.

Mr. KEEFER. About an average for that year?

Mr. BOURGEOIS. Yes.

Mr. KEEFER. And the other pencil mark that you have made, that the Rainy River water surface at the Canadian Northern Railway bridge, July 22, 1907, was 1,061.7?

Mr. BOURGEOIS. Yes.

Mr. KEEFER. With that official data away back in 1907, you started in on a basis of a level, as you say, of 1,056?

Mr. BOURGEOIS. No; my basis has nothing to do with that at all.

Mr. KEEFER. What you were doing was to drain the back country?

Mr. BOURGEOIS. Yes; and with these lines established the results are as I stated; that is what I am using, 1,056.

Mr. STEENERSON. About what is the usual expense per cubic yard, if you can tell, for digging these ditches?

Mr. KEEFER. That is all in the report.

Mr. STEENERSON. No; that was made six years before the ditch was dug.

Mr. BOURGEOIS. We pay about an average of about 16 cents per yard for our work.

Mr. STEENERSON. About what proportion of these ditches that you mentioned that cost in the neighborhood of \$900,000 has already been constructed? How much has been expended altogether—that is, those that run into the Lake of the Woods or turn their water into the Lake of the Woods?

Mr. BOURGEOIS. Of these ditches that I have mentioned, there is about 75 or 80 per cent completed.

Mr. TAWNEY. That is, not 75 or 80 per cent of all; just of the particular ditches?

Mr. BOURGEOIS. Yes; the total of these ditches. This is 5 of the 12 projects I have under way.

Mr. TAWNEY. They are 75 per cent completed?

Mr. BOURGEOIS. Yes.

Mr. TAWNEY. You have the estimated contract price of each ditch?

Mr. BOURGEOIS. Yes.

Mr. TAWNEY. So that it can be computed?

Mr. BOURGEOIS. Yes. The amounts I gave you are the actual amounts of the contracts.

Mr. TAWNEY. And the total sum of them——

Mr. BOURGEOIS. That is the total cost of the projects.

Mr. TAWNEY. And of that about 75 per cent has already been done?

Mr. BOURGEOIS. Yes.

Mr. CHALLIES. Does that include excavating the ditches right out to the lake?

Mr. BOURGEOIS. Yes; it does.

Mr. CAMPBELL. How large an engineering staff is on this work?

Mr. BOURGEOIS. It is mighty hard to say.

Mr. CAMPBELL. Where do you file your reports?

Mr. BOURGEOIS. For this county?

Mr. CAMPBELL. For this and Beltrami?

Mr. BOURGEOIS. At Bemidji.

Mr. CAMPBELL. Whose name are they filed under? Are you the chief engineer?

Mr. BOURGEOIS. No.

Mr. CAMPBELL. Who is the chief engineer?

Mr. BOURGEOIS. We have no chief. We have an engineer for the court. The court for the district is really the chief of the system.

Mr. CAMPBELL. And you act under the court's direction?

Mr. BOURGEOIS. Yes.

Mr. CAMPBELL. Who is the chief engineer on the works?

Mr. BOURGEOIS. I am.

Mr. CAMPBELL. Then we look for your name searching to get reports?

Mr. BOURGEOIS. Yes. They are all on file at Bemidji.

Mr. CAMPBELL. That is the county town of Beltrami?

Mr. BOURGEOIS. Yes.

Mr. BERKMAN. Mr. Chairman, I desire to call the commission's attention to the statements of Mr. Ralph, drainage engineer of the State of Minnesota, made at the hearings held by the commission in 1912, which statements appear on pages 87, 88, and 93 of the progress report of the International Joint Commission on the reference by the United States and Canada in re the levels of the Lake of the Woods.

Mr. WYVELL. Mr. Bourgeois, the assessment for the ditches which you have mentioned are made against unfilled United States public lands as well as against other lands, are they not?

Mr. BOURGEOIS. I understand it to be that way.

Mr. STEENERSON. Mr. Chairman, I understand that you are about to adjourn. I have no more evidence to offer, and I want to thank you all for overlooking any excitement that occurred during the debate, or anything of that kind.

(The commission adjourned at 12.10 p. m. until 1.45 p. m.)

AFTER RECESS.

WARROAD, MINN., *Thursday, September 9, 1915.*

The commission reassembled at the expiration of the recess, all the members being present, Mr. Tawney presiding.

Mr. TAWNEY. Mr. Wyvell, have you any further testimony?

Mr. WYVELL. Yes; I would like to call Mr. Holdahl.

TESTIMONY OF S. T. HOLDAHL, OF ROSEAU, MINN.

(S. T. Holdahl, being first duly sworn, testified as follows:)

Mr. WYVELL. Where do you reside?

Mr. HOLDAHL. Roseau, Roseau County, Minn.

Mr. WYVELL. How far is that from Warroad?

Mr. HOLDAHL. It is 22 miles by rail.

Mr. WYVELL. How long have you lived in Roseau?

Mr. HOLDAHL. Twenty years.

Mr. WYVELL. What businesses have you been engaged in in Roseau?

Mr. HOLDAHL. General merchandise and land.

Mr. WYVELL. Since retiring from that business what has been your occupation?

Mr. HOLDAHL. Buying and selling farm land.

Mr. WYVELL. Have you personally visited all sections of Roseau County?

Mr. HOLDAHL. Not this eastern part of Roseau County. All the county tributary to Roseau I have.

Mr. WYVELL. Of course, you have been to Warroad frequently, have you not, before to-day?

Mr. HOLDAHL. Yes, sir.

Mr. WYVELL. And being in the land business you have observed the character of the land around here, have you not?

Mr. HOLDAHL. Yes, sir.

Mr. WYVELL. But your particular acquaintance is with lands around Roseau County?

Mr. HOLDAHL. Yes, sir.

Mr. WYVELL. You have been acquainted, of course, with individual sales of land in your section, have you not?

Mr. HOLDAHL. Yes, sir.

Mr. WYVELL. And you have been a broker in a good many such sales?

Mr. HOLDAHL. Yes.

Mr. WYVELL. What, in your judgment, is a farm of 160 acres, with appropriate buildings, in the section where you reside worth?

Mr. HOLDAHL. There are farms tributary to Roseau with good buildings on that you could not buy for less than \$75 an acre.

Mr. WYVELL. What range of prices would you state?

Mr. HOLDAHL. Improved farms with reasonably good buildings and cleared are worth all the way from \$50 to \$75 an acre.

Mr. WYVELL. What would be the value of such land in units of about 160 acres without any buildings?

Mr. HOLDAHL. That is land cleared of brush?

Mr. WYVELL. Land either partly in hay or under the plow.

Mr. HOLDAHL. It depends a little on the distance from town, but all the way from \$15 to \$35 an acre.

Mr. MIGNAULT. That is cleared land?

Mr. HOLDAHL. Yes; partly cleared from brush and timber.

Mr. WYVELL. Do you feel that you can speak accurately of land values from the lake back 2 or 3 miles?

Mr. HOLDAHL. Up around here?

Mr. WYVELL. Around here.

Mr. HOLDAHL. No; I could not. So far as the soil is concerned, what I have seen is similar to the soil we have.

Mr. WYVELL. That is your best judgment of the soil here, that it is of the same character as the soil near Roseau?

Mr. HOLDAHL. Yes. As a rule it is a heavy black loam with a clay subsoil.

Mr. WYVELL. The soil is fairly productive, is it not?

Mr. HOLDAHL. Yes.

Mr. TAWNEY. The black loam you speak of is the prevailing character of the soil throughout this county, is it not?

Mr. HOLDAHL. Yes, sir.

Mr. TAWNEY. And throughout this section of the State of Minnesota?

Mr. HOLDAHL. Yes, sir.

Mr. TAWNEY. How far from Roseau have you knowledge of the value of lands gained from your experience in the land business?

Mr. HOLDAHL. Say 10 or 15 miles in either direction.

Mr. TAWNEY. Your business extends practically all over the county then?

Mr. HOLDAHL. Yes, sir. I have resided here for 20 years and have been acquainted all over the county.

Mr. TAWNEY. You have lived in the county 20 years, have you?

Mr. HOLDAHL. Yes; since 1895.

Mr. GARDNER. Have you any knowledge as to the cost per acre of clearing these lands?

Mr. HOLDAHL. Yes; to some extent. I have had some lands cleared.

Mr. GARDNER. What, in your judgment, would it cost on an average to bring these lands around here under a state of cultivation, or to a point where they could be cultivated?

Mr. HOLDAHL. That depends on the amount of timber and the quality of the timber on the place.

Mr. GARDNER. I am speaking of the average cost.

Mr. HOLDAHL. To bring it into a state of cultivation it would take \$25 to \$35 an acre on most of the timber or heavy brush land. Some of the brush land is almost harder to clear than the timberland.

Mr. KEEFER. Have you any market for that timberland when it is cleared?

Mr. HOLDAHL. Not around Roseau.

Mr. KEEFER. Would there be any market for it around here?

Mr. HOLDAHL. I presume they have here a market for the wood or a part of it.

Mr. LAIRD. Do you know of any sales near Warroad in recent years?

Mr. HOLDAHL. No.

Mr. LAIRD. What is the nearest transaction you have had to Warroad? I do not want you to give hearsay testimony, but to state matters that have gone through your own hands.

Mr. HOLDAHL. I haven't had any at Warroad.

Mr. LAIRD. Well, the nearest one to Warroad.

Mr. HOLDAHL. It would be between 17 and 18 miles.

Mr. LAIRD. What was that sale?

Mr. HOLDAHL. That sold for \$25 an acre.

Mr. LAIRD. It was of the same character as land we have here around the lake?

Mr. HOLDAHL. Yes.

Mr. LAIRD. In what year was that?

Mr. HOLDAHL. That was three years ago.

Mr. LAIRD. Can you describe the improvements—the nature of the buildings?

Mr. HOLDAHL. There wasn't much in the way of buildings on the place at the time.

Mr. LAIRD. Was any of it cleared?

Mr. HOLDAHL. Yes.

Mr. LAIRD. How many acres?

Mr. HOLDAHL. Probably 75 acres.

Mr. LAIRD. Seventy-five acres were cleared out of 160 acres?

Mr. HOLDAHL. Yes, sir.

Mr. LAIRD. That is a very large proportion, is it not, for the average Minnesota farmer?

Mr. HOLDAHL. I do not know.

Mr. LAIRD. Have you had any transactions farther up along the lake shore around Zippel?

Mr. HOLDAHL. No.

Mr. LAIRD. Have you had anything near Baudette?

Mr. HOLDAHL. No; I have never had any transactions up there; in fact, I am not acquainted up in that country. I have not been up in that country since 1896, and that is too far back.

Mr. LAIRD. Do you know anything about the State lands that lie west of us and between here and the international boundary?

Mr. HOLDAHL. I do not.

Mr. LAIRD. Do you know anything about sales that are held from time to time of those State lands?

Mr. HOLDAHL. No; I do not. I do not know anything about sales in that direction.

Mr. LAIRD. Are you aware that there are State lands in the market there for sale?

Mr. HOLDAHL. Yes, sir.

Mr. LAIRD. And there have been for how many years?

Mr. HOLDAHL. For a number of years.

Mr. LAIRD. Are they taken up, and if so, to what extent?

Mr. HOLDAHL. I could not tell you. I have not kept posted on that.

Mr. LAIRD. I suppose it is your business rather to dispose of improved lands?

Mr. HOLDAHL. Yes, sir.

Mr. LAIRD. The timber, you say, has no commercial value at all?

Mr. HOLDAHL. Not tributary to Roseau.

Mr. LAIRD. Take the firewood; has it any value to the settlers?

Mr. HOLDAHL. I have only this experience in the firewood; last winter I was clearing some land, and I got 100 cords of wood and paid 85 cents for the cutting and a dollar to haul it into town. The best that I can get out of it is \$2.50, and then I have to transfer it, which will cost me probably 35 cents to 40 cents.

Mr. LAIRD. For the settler on the farm it has value as wood?

Mr. HOLDAHL. It has value as wood, and if you do your own work and haul it at times when you have nothing else to do, you would realize something out of it.

Mr. LAIRD. That is, you would not have to be buying fuel at those times?

Mr. HOLDAHL. No.

Mr. LAIRD. You could not estimate what that value would be per acre, could you? How many cords would you take off an acre, on the average?

Mr. HOLDAHL. I could not say how much; but probably from some of the land you could take from 50 to 70 cords per acre.

Mr. LAIRD. I understood you to tell my learned friend that cultivated land, that is, land that has been cleared and is under plow, is worth generally from \$15 to \$35 an acre.

Mr. HOLDAHL. From \$15 to \$35 an acre.

Mr. TAWNEY. That is without improvements. Mr. Anderson said with improvements.

Mr. HOLDAHL. That is with little or no improvements.

Mr. ANDERSON. Can you give us the average value of an acre of land which has been under plow and kept plowed or cultivated with crops but may be under grass at the time, leaving out of the question the buildings on the farm proper.

Mr. HOLDAHL. That is just what I had reference to.

MR. ANDERSON. You say that the value of that kind of land, which is ready for the plow and which can be cultivated, varies from \$15 to \$35 an acre?

MR. HOLDAHL. Yes, sir; according to the distance from town or market.

MR. ANDERSON. Land near Warroad would be the most valuable in this part of the county?

MR. HOLDAHL. Of course, as I said, I have absolutely no knowledge of the values of land along the lake shores.

MR. ANDERSON. Your variation in prices is due to the distance from stations on the railway, or such things as that?

MR. HOLDAHL. Yes, sir.

MR. ANDERSON. Then, land back from the railway lines, say, 12 to 14 or 16 miles would depreciate?

MR. HOLDAHL. Some; yes.

MR. ANDERSON. And they would go down to the lowest point?

MR. HOLDAHL. I have known of lands at 14 and 15 miles from town selling as high as \$40 an acre; that is, improved or cleared lands with buildings.

MR. ANDERSON. Buildings would go in that price of \$40 an acre?

MR. HOLDAHL. Yes, sir.

MR. TAWNEY. Mr. Holdahl, you know what marsh and bog lands that have been referred to here in these hearings are?

MR. HOLDAHL. Yes, sir.

MR. TAWNEY. Have you any knowledge as to the value of marsh or bog lands? You have marsh or bog lands throughout this county, to a more or less extent, have you not?

MR. HOLDAHL. Yes, sir; more or less. From the sales that the State of Minnesota has made from time to time of what they call the swamp land down here the price has been as high as \$20 to \$25 an acre, some of them, and that is swamp upon which you will find from 2 to 4 feet of peat.

MR. TAWNEY. It sold as high as \$25 an acre, you say. At how low a price did it sell?

MR. HOLDAHL. \$7.

MR. TAWNEY. There has been no testimony as to the value of bog land, and it just occurred to me to ask that question.

MR. HOLDAHL. That was at the State land sales.

MR. TAWNEY. The State land sales are conducted in open competition? They are public sales, are they not?

MR. HOLDAHL. Yes, sir. At one sale they sold over 4,000 acres.

MR. TAWNEY. In this county?

MR. HOLDAHL. Yes, sir.

MR. TAWNEY. That land sold from \$20 to \$25 an acre?

MR. HOLDAHL. Yes, sir.

MR. TAWNEY. These sales are advertised by the State?

MR. HOLDAHL. They are advertised every month, from April to November.

MR. TAWNEY. Are they largely attended by prospective purchasers?

MR. HOLDAHL. They are at certain times after they have put some new land on the market.

MR. POWELL. Does the State require cash-down payment for the land?

Mr. HOLDAHL. Fifteen per cent down and the balance in 40 years at 4 per cent interest.

Mr. WHITE. Mr. Chairman, in your question you referred to bog lands, and I was wondering if you noticed that the witness in making his reply used the expression "swamp land." There would be quite a distinction between what I think you had in mind, namely, bog lands as covered by our surveys, and the classification of swamp which we also have under the term "coniferous swamp." It occurred to me that there might be some confusion, and I wondered if you noticed that difference?

Mr. HOLDAHL. I meant by swamp lands lands that are known as swamp lands from the certificate which the purchaser obtained from the State. Most of them are either tillable or will be when thoroughly drained.

Mr. TAWNEY. Have you seen the maps, Mr. Holdahl, which accompany the report of the consulting engineers of the Commission?

Mr. HOLDAHL. I have seen a few of the sheets which were sent out.

Mr. TAWNEY. Have you observed the legends on these maps which are intended to indicate the difference in the character of the lands?

Mr. HOLDAHL. No; I can not say that I have paid much attention to the different character of the lands.

Mr. TAWNEY. I will ask you whether you know what marsh and bog land is?

Mr. HOLDAHL. Yes; I think I know.

Mr. TAWNEY. Do you classify marsh and bog lands the same as swamp lands which the State sells?

Mr. HOLDAHL. I think that is about the same thing. What they call swamp land is about the same as I would call marsh and bog, that is, some of it.

Mr. TAWNEY. What do you know about the value of willow land, land that is covered with willows?

Mr. HOLDAHL. The land that is covered with willow, in my estimation, would be awful hard to clear.

Mr. TAWNEY. It is so wet that unless it is drained it is practically worthless, is it not?

Mr. HOLDAHL. I would not say that it is practically worthless, but to clear the land from willows is almost worse than to tackle the poplar timber.

Mr. TAWNEY. It is suggested, Mr. Holdahl, that if you can you give your description of what you mean by swamp land and what you mean by open marsh or bog lands.

Mr. HOLDAHL. For instance, we have this side of Roseau tracts of open swamp, as we call it. It has all the way from 1 foot to 3 feet of muck or peat on top of it, so before they put in any drainage system they could not get out there. With the drains they can get out there and cut hay, and it seems to be drying up.

Mr. TAWNEY. It is productive land?

Mr. HOLDAHL. Yes, sir; Where the peat is not too deep it seems to be very productive.

Mr. TAWNEY. If the peat is so deep that in plowing you do not reach the subsoil or clay, it is practically nonproductive?

Mr. HOLDAHL. Even at that, after you get it broke, the peat will kind of settle and work down. We have grown very nice crops of flax on that kind of soil.

Mr. ANDERSON. How long have you been in this vicinity, Mr. Holdahl?

Mr. HOLDAHL. I have lived in Roseau County for 20 years.

Mr. ANDERSON. Are you familiar with the lands on the south shore of the lake lying within the State?

Mr. HOLDAHL. No, sir.

Mr. ANDERSON. I mean in a general way are you familiar with the characteristics of the land?

Mr. HOLDAHL. No, sir.

Mr. ANDERSON. You have never been along the shore, for instance?

Mr. HOLDAHL. No; I have not.

Mr. ANDERSON. The only place that you are familiar with the shore line is within the vicinity of Roseau?

Mr. HOLDAHL. There is no shore line there.

Mr. ANDERSON. Well, in the vicinity of the lake, then.

Mr. HOLDAHL. I am not acquainted in that vicinity.

Mr. ANDERSON. You do not know that the land all along the south shore of the lake here is low and flat?

Mr. HOLDAHL. I do not know anything about it.

Mr. ANDERSON. With reference to the open marsh or bog land that has been spoken of, when it is in the condition of open marsh or bog it is practically worthless, is it not?

Mr. HOLDAHL. Until you can get it thoroughly drained.

Mr. ANDERSON. Then it takes a long time before it becomes of any commercial value?

Mr. HOLDAHL. It does not take so very long after the ditches are put in.

Mr. ANDERSON. How many years would it take after the ditches are put in?

Mr. HOLDAHL. Soon after the ditch systems are put in you can get to work and break them up.

Mr. ANDERSON. What is the land worth before the ditches are put in?

Mr. HOLDAHL. It was not considered worth a great deal until the ditches were put in.

Mr. ANDERSON. What would it be worth without the drainage? Would it be worth anything?

Mr. HOLDAHL. Some of them have homesteads, for instance. They could not live there and they sold what they got.

Mr. ANDERSON. Well, it wasn't of any use?

Mr. HOLDAHL. No.

Mr. ANDERSON. Do you know anything about land that is described as "floating bog"?

Mr. HOLDAHL. I can not say that I do. I have no knowledge of floating bog.

Mr. CAMPBELL. Roseau is your county seat also, is it not?

Mr. HOLDAHL. Yes, sir.

Mr. CAMPBELL. And the settlement there is older than the one here?

Mr. HOLDAHL. Very little.

Mr. BERKMAN. You spoke of the lands east of Roseau. You meant the lands known as Hay Creek Swamp?

Mr. HOLDAHL. I meant the land from Roseau River to Salol, where it is open through there.

Mr. BERKMAN. Mr. Holdahl, what was the value of that land before it was drained?

Mr. HOLDAHL. There was but very little of that land sold before the ditch system went through.

Mr. BERKMAN. Can you tell whether or not it had any value before the ditch system was put there?

Mr. HOLDAHL. It certainly had some value, but not the value that it had after the system was put there.

Mr. BERKMAN. Could you tell the commission whether the muskeg out on that swamp was such that when you got out on it it would spring, and whether or not it was possible to drive a horse on it?

Mr. HOLDAHL. It was impossible in some places.

Mr. BERKMAN. In most places it was an impassable swamp, and it would be absolutely a bog, so far as general intents and purposes are concerned?

Mr. HOLDAHL. It was no bog, but the country was too wet for any use, so far as farming was concerned, until they put the ditch system through.

Mr. BERKMAN. Three years ago at public sale there were many acres that sold for \$25 an acre?

Mr. HOLDAHL. All the way from \$8 to \$25.

Mr. TAWNEY. I want to ask the village clerk, Mr. Heinbeck, a question. Mr. Heinbeck, have you a survey of the village of Warroad showing the elevation of the village above the lake levels?

Mr. E. M. HEINBECK. I do not know. I would like to look that up.

Mr. TAWNEY. Have you a village surveyor or engineer?

Mr. HEINBECK. No, sir.

Mr. TAWNEY. I will ask Mr. Meyer or Mr. White. Have you in your report any evidence of the elevation of the village of Warroad above the level of the river?

Mr. MEYER. The Warroad sheet shows contours running through the town, and, in addition to that, we have, of course, the original field sheets which show actual elevations at various points throughout the town.

Mr. TAWNEY. It was stated here yesterday that a rise of 4 feet would entirely wipe out the village of Warroad. In looking over the village this morning it appeared to me that the elevation was considerably higher than that, and I was just wondering if we could get, for purposes of the record, an accurate statement of what the elevation was. I do not know that it is material at all, except that it may have some bearing on that question.

Mr. MEYER. It appears that the elevation of the ground on which the main business portion of the town is built is a little above 1,067. There is another portion in the vicinity of the schoolhouse just a little above 1,068 and a portion just east of the bridge, including the road and the buildings on each side, which is 1,067. Most of the remainder is 1,066 or above.

Mr. TAWNEY. And the level of the river is what?

Mr. MEYER. 1,060.6.

Mr. TAWNEY. That would give 7 feet.

Mr. WYVELL. Since we have brought up the subject, I wish to ask the clerk a question or two. In your testimony the other day you mentioned something about the wash from the streets not being pumped into the septic tank; is that correct?

Mr. HEINBECK. Yes, sir.

Mr. WYVELL. It is not pumped in for the reason that it is too expensive to do so?

Mr. HEINBECK. Yes, sir.

Mr. WYVELL. When the water is high, what is the effect of the wash from the street?

Mr. HEINBECK. I do not know whether the lake would have any relative action.

Mr. POWELL. There is one thing I would like inquired into. We have quite a number of classifications of land, and, while we have had the opinion of Mr. Holdahl in respect to bog and what he means by bog and what he means by swamp, there are a number of other classifications there that have not been mentioned. There is juniper and tamarack, for instance.

Mr. HOLDAHL. What I understand by tamarack swamp is swamp that is covered with tamarack, roots and tamarack.

Mr. POWELL. Would you include that within the term "swamp lands" as you used the term?

Mr. HOLDAHL. The term is "tamarack swamp" here.

Mr. POWELL. Would it fall within the classification made by the Government of State swamp lands?

Mr. HOLDAHL. That is the way the reports would be sent in to the State when it is examined for putting it on the market.

Mr. POWELL. Take grass lands. Would that be included in swamp lands?

Mr. HOLDAHL. Grass lands or meadow lands.

Mr. POWELL. Take grass lands with scattered poplar trees over it. As what would that be classified by the Government?

Mr. HOLDAHL. That is about the classification occasionally it would have.

Mr. POWELL. Then there is the classification "deciduous trees." That means poplar, balm of Gilead, and oak.

Mr. HOLDAHL. We would call them timber to a certain extent, I suppose.

Mr. POWELL. Is that what you mean by that kind of land, timbered land?

Mr. HOLDAHL. I think so.

Mr. POWELL. Now, take the open marsh or bog. That is muskeg, is it not, Mr. White?

Mr. WHITE. That was the long description that I gave the day before yesterday.

Mr. POWELL. What do you mean by it; is that muskeg?

Mr. WHITE. No; it is an open marsh or bog, such as we find in the vicinity of Mr. Landby's. It is free from timber.

Mr. MAGRATH. Is it what is locally known as open marsh or bog? The witness has described open marsh or bog. There are certain lands in this locality that evidently are locally known as marsh or bog. Is your definition based upon that character of land?

Mr. WHITE. No, sir. The witness was asked if he was familiar with floating bog, and he said no. A large percentage of our open

marsh or bog, as was pointed out in the testimony day before yesterday, is floating bog. If I mistake not, the witness said that he was not familiar with the lands along the shore of the lake. Our surveys were made along the lake shore.

There is one other short classification here that Mr. Powell has been dealing with, namely, the deciduous trees. Inasmuch as it is fairly short I will read our description to the witness and ask if it is intelligible to him as a classification of land with which he is familiar, because this classification of land extends back from the shore. He will find this inland. The description reads as follows:

Deciduous trees.—Under the classification "Deciduous trees" are placed poplar, birch, elm, ash, and oak. This, approximately, is the order of the combined extent and value of this group, of which poplar is the most prevalent. On the drier arable lands, poplar, birch, and elm are found, and ash on the swampy ground. Scrub oak, usually subsisting on rocky soil, is the only variety of this tree found within the areas covered by the surveys.

Now, on our maps below elevation 1,064 there are 8,360.5 acres of this land. As I have read that description have you pictured to yourself that land?

Mr. HOLDAHL. Yes, sir.

Mr. WHITE. You know what is described by that land? There is no mistaking the description of that land?

Mr. HOLDAHL. There is no mistaking the description.

Mr. POWELL. What value do you put on that, so far as you know that character of land?

Mr. HOLDAHL. Of course, that would depend a good deal on the location of the land. I have been out appraising for the State and we have to determine the prices according to the location of the lands and the country tributary to it.

Mr. POWELL. What would be the range of values?

Mr. HOLDAHL. All the way from \$7 to \$12 an acre, but when it came to the sale it brought as high as \$25, some of it.

Mr. WHITE. There is one other classification I would like to read. It is as follows:

Coniferous swamp.—A large amount of land included in the International Joint Commission surveys is classified under "Coniferous swamp." Such land has upon it growths of the smaller tamarack, spruce, balsam, or cedar. Generally speaking, the growth on these swamps, except in instances where poles, fence posts, and some railroad ties may profitably be marketed, are not commercially valuable. The tamarack and spruce, except in isolated instances, is quite small, averaging, it is said, about 5 or 6 inches. The general swamp floor consists of the usual well-known hummocky mossy growth.

Do you understand that description?

Mr. HOLDAHL. Yes, sir. You do not have to go very far in order to find it.

Mr. POWELL. What would you say is the range of values on that land?

Mr. HOLDAHL. It all depends on the amount of timber on it. In some places you will find that the class of land timbered with what they call pulp wood, if the pulp is worth much and it is easy to get it to market, is of considerable value if it has the size.

Mr. POWELL. Are we to infer from that that the value depends upon the quality of the growth on the land independently of the growth as worth something or nothing?

Mr. HOLDAHL. That would be placed at not less than \$5 an acre and up, if it were put on the market.

Mr. POWELL. Would \$5 and upwards cover both the timber and the land?

Mr. HOLDAHL. No; the timber would have to be appraised separately.

Mr. POWELL. That land you would put from \$5 up to what range as the highest?

Mr. HOLDAHL. It depends on the location, of course.

Mr. TAWNEY. Mr. Holdahl, how long have you acted as an appraiser for the State of Minnesota?

Mr. HOLDAHL. I was out one season.

Mr. TAWNEY. All of this land that has been described by Mr. White is classed in this State and is sold by the State as swamp land. is it not, under the swamp-land grant?

Mr. HOLDAHL. It is sold as swamp land unless it is in the land that is within the school section.

Mr. TAWNEY. Outside of that all that land is classed as swamp land and sold as such?

Mr. HOLDAHL. Yes, sir.

Mr. TAWNEY. That is the land to which you have reference here as having been sold at the State sale at from \$7 to \$25 an acre?

Mr. HOLDAHL. Yes, sir.

Mr. POWELL. Are you familiar with the classification there of wet moss and floating bog?

Mr. HOLDAHL. Not the floating bog.

Mr. POWELL. You do not know anything about that?

Mr. HOLDAHL. No, sir.

Mr. POWELL. Well, the wet moss, would that be valuable? If so, how much would it be worth? It is practically valueless, is it not?

Mr. HOLDAHL. It is until it is drained. The soil is there. If it is drained and this poor timber that is on it is burned off, the soil is good and it is probably just as valuable as the rest of it.

Mr. POWELL. It would require quite an expenditure of money?

Mr. HOLDAHL. Yes, sir; unless you let the elements do it.

Mr. BERKMAN. As a matter of fact, Mr. Holdahl, a good deal of this land that is described as swamp land is land that when they opened up this public domain they permitted the people to go in on and take their homesteads, and after it had been opened for a certain time the balance of the land was turned over to the State under the swamp-land grant?

Mr. HOLDAHL. I think that was the way.

Mr. BERKMAN. That is, after it was left open for homesteads and the homesteaders went in and took the high lands, the balance of these lands was designated as State and swamp lands or lands that the homesteaders in settling up the country did not file on.

Mr. HOLDAHL. I think that is right.

Mr. BERKMAN. You testified in regard to these lands having tamarack and stuff of that kind on them being worth \$5 an acre.

Mr. HOLDAHL. I said \$5 an acre and up, because that is the lowest that the State will allow.

Mr. BERKMAN. That is the value on them before they are drained?

Mr. HOLDAHL. Before they are drained; yes, sir.

Mr. BERKMAN. What value does it place on them after they are drained and put in good shape?

Mr. HOLDAHL. The ditch diggers usually assess land from \$1.50 to \$2.50 an acre.

Mr. BERKMAN. Does it increase the selling value of the land?

Mr. HOLDAHL. Yes, sir; it increases the value of the land.

Mr. WYVELL. In other words, you have known much of this swamp land to be reclaimed and to be made good fertile farm land by a system of ditches, and when that is done it is as good as any other farm land?

Mr. HOLDAHL. Yes, sir.

Mr. CAMPBELL. Except that which needs clearing?

Mr. HOLDAHL. Except that which needs clearing; yes, sir. What is classified as swamp land is not all swamp land; there is lots of high land.

Mr. TAWNEY. I want to correct Mr. Berkman in regard to what was classified as swamp land. The grant from the Federal Government to the State was not a grant of land that was not taken up by settlers because of the land being swampy. When the original surveys were made by the Federal Government there was a great deal of land in this State classified from the field notes of the surveyors as swamp land. It was that swamp land which was supposed to be swamp land that was granted to the State, much of it for school purposes. Then, in addition to that, there was another grant of swamp land to the State university. It was afterwards discovered that a great deal of the land that was designated and had been granted as swamp land was not swamp land at all, and the State has had a great deal of trouble with the Federal Government in securing the certification of the land granted to the State in the early history of the State. In fact, that controversy began almost immediately after the State was admitted to the territory. The swamp lands are not the lands that were rejected, as Mr. Berkman intimates, but they are the lands that were designated on the field notes of the surveyors as being the swamp lands. Those were lands that the Federal Government granted. I think there are to-day in controversy between the State and the Federal Government some 2,000,000 or more acres, the Federal Government refusing to certify, while the State is relying on its grant.

Mr. BERKMAN. As far as Roseau County is concerned I beg to differ with Mr. Tawney concerning the swamp land.

Mr. TAWNEY. I am talking only about the swamp-land grant. I do not know what is swamp land and what is not swamp land. Historically my statement is correct.

Mr. BERKMAN. So far as Roseau County was concerned I put the question to Mr. Holdahl regarding the lands that were open for settlement by townships. They left them open for settlement for a period of time, some three or four or five years, and the lands that were not taken the State selected as swamp lands.

Mr. POWELL. One of the engineers has put in my hands an abstract of the act of September 28, 1850, regarding swamp and overflowed lands. It reads as follows:

The act of September 28, 1850 (9 Stat., 519), granted to the public land States then in the Union, "the whole of those swamp and overflowed lands, made unfit thereby for cultivation," which remained unsold at the date of the

act. The said grant was extended to the States of Minnesota and Oregon by the act of March 12, 1860 (12 Stat., 3). Section 3 of the act of 1850, *supra*, provides that in making out lists of such lands all legal subdivisions, the greater part of which is "wet and unfit for cultivation" shall be included in said lists, but when the greater part of a subdivision is not of that character the whole of such subdivision shall be excluded therefrom.

It looks as if the classification "swamp lands" by the State covered lands that were too wet for cultivation or homesteading.

Mr. TAWNEY. That was what was shown on the field notes of the surveyors and that was the land that the Government understood to be swamp lands. Subsequently, when the State was admitted into the Union, much of that land was surveyed and classified, and it was found not to be in fact swamp land. Am I not correct, Mr. Meyer, in regard to the fact that a great deal of that land that was classified as swamp land subsequently was discovered not to be swamp land at all?

Mr. MEYER. Yes; I think that is correct. There are some other matters in that abstract that are of interest.

Mr. POWELL. I will read the rest of it.

In order to bring lands within the terms and meaning of the grant (1) the greater part of such quarter-quarter section (40 acres) or other smallest legal subdivision (lots designated by numbers) must have been so (2) swamp or subject to overflow during the (3) planting, growing, or harvesting season in the (4) majority of years at or near the date of the grant; as to be (5) unfit for cultivation (6) in the staple crops of the country (7) without the use of some artificial means of reclamation, such as embankments, levees, or ditches.

Lands which may become swampy, or liable to overflow, at a season of the year when this condition does not interfere with the planting, cultivating, or harvesting of a crop thereon, at the proper time and by the ordinary methods, not being "made unfit thereby for cultivation," does not pass to the State under the swamp land grant.

Tame grass or hay, when produced by the ordinary methods of plowing and preparing the ground and sowing seeds, is deemed as much of a staple crop as any of the cereals.

The area or proportion of every tract claimed that is swamp should be stated and the causes that make it wet and unfit for cultivation should be clearly, fully, and exactly ascertained.

Mr. TAWNEY. Gentlemen, we have arranged to go to the south shore here at half past 3 o'clock, and in the meantime if Mr. Anderson wants to interrogate the commissioner of fisheries of the Dominion of Canada on the subject of fishing interests, we would be glad to have him utilize the time.

Mr. ANDERSON. Mr. Chairman, I understand that there is a gentleman here by the name of McCormack who wishes to make some statement to the commission, and I think that we might perhaps hear him now.

TESTIMONY OF ROBERT J. M'CORMACK.

(Robert J. McCormack, having been duly sworn, testified as follows:)

Mr. TAWNEY. How long have you been here?

Mr. M'CORMACK. Pretty close to five years.

Mr. TAWNEY. What is your business?

Mr. M'CORMACK. I have been boating on the lakes with sail boat.

Mr. TAWNEY. Do you desire to make a statement to the commission concerning the level of the lake?

Mr. McCORMACK. Yes, sir; I would like to.

Mr. TAWNEY. In respect to what phase of the investigation—fishing, navigation, or the valuation of lands?

Mr. McCORMACK. Navigation and valuation of lands, because there is some interested in land on the lake as well as I am interested in the boat.

Mr. TAWNEY. Do you own any land on the shore of the lake?

Mr. McCORMACK. No; I do not.

Mr. TAWNEY. You may proceed here, if there is nobody wishes to examine you; you may make your statement, and then they can cross-examine you later.

Mr. McCORMACK. I was asked in regard to the water this morning; a man asked me what I thought of the water being put down $7\frac{1}{2}$ feet, and my opinion is that I would not like to see the water put down over $3\frac{1}{2}$ feet on the summer standard.

Mr. TAWNEY. What do you mean by that?

Mr. McCORMACK. Where the water has been the level that it has been this summer, the average height that it has been this summer.

Mr. TAWNEY. Why do you fix it at three and a half?

Mr. McCORMACK. Because that gives the shore; there is practically no wash at three and a half below this level. That is as near as I can say it, and it leaves us water to get up within respectable reach of the shore with a boat.

Mr. KEEFER. Do you mean the lowest gauge should not be less than $3\frac{1}{2}$ feet below what it is now?

Mr. McCORMACK. Yes. The average stage should not be any lower anyway than 4 feet or 5 feet at the outside, lower than it is on this summer's level. It should not be any lower than that.

Mr. KEEFER. I do not quite get that. Is that to be the lowest stage that you want, or would you like to see it higher than 3 or 4 feet below what it is now?

Mr. McCORMACK. Yes; I would like to see it higher.

Mr. KEEFER. What level would you like to set it at?

Mr. McCORMACK. I would like to see it about 3 feet lower than this summer's level.

Mr. KEEFER. It is to-day supposed to be 1,060.6, but now what would you like to see that water at, relative to 1,060.6?

Mr. McCORMACK. Take this summer's average, you have an average height of water, have you not?

Mr. KEEFER. I do not know what that is; tell me what that is?

Mr. McCORMACK. Well, sir, I do not know; I have not went into that deeply.

Mr. CAMPBELL. How does it compare with what it is now?

Mr. KEEFER. Is this the average?

Mr. McCORMACK. It is just about 16 inches lower to-day than it was—at the average high-water mark.

Mr. KEEFER. It is 16 inches lower to-day than it was—the average high-water mark?

Mr. McCORMACK. Yes.

Mr. KEEFER. Does this state of level suit you?

Mr. McCORMACK. This state of level to-day is practically to the advantage in boating; you can make the shores—reach the shores. It is an advantage, but it is detrimental in other ways to the shores,

where I think 3 feet below the level would be the satisfactory point.

Mr. KEEFER. But you would not want to see it go any lower than that?

Mr. McCORMACK. I would not want to see it go any lower than 5 feet lower than it is to-day.

Mr. WYVELL. But you would not want to see it any lower than the natural level?

Mr. McCORMACK. Yes.

Mr. TAWNEY. You know what the natural level is?

Mr. McCORMACK. I know what it is when it is low, because I tried to boat when it was pretty low.

Mr. TAWNEY. When was that?

Mr. McCORMACK. Five years ago.

Mr. MIGNAULT. If you can define the natural level the commission would be very much obliged to you.

Mr. POWELL. It was too low for your purposes five years ago?

Mr. McCORMACK. It was too low for any idea I had of navigation.

Mr. POWELL. You found it inconvenient?

Mr. McCORMACK. Yes. You could not get within half a mile of shore almost anywhere, and places you could not get within a mile of shore without touching bottom with a boat drawing $4\frac{1}{2}$ feet of water.

Mr. TAWNEY. What kind of a craft do you navigate?

Mr. McCORMACK. I can qualify to navigate pretty near any of them on this Lake of the Woods.

Mr. TAWNEY. What do you navigate?

Mr. McCORMACK. I am building one.

Mr. WYVELL. You are not a navigator now?

Mr. McCORMACK. No; I am a wood builder—I am a carpenter.

Mr. KEEFER. There was something you were going to say about land values, in addition to navigation?

Mr. McCORMACK. No; I do not know anything about land values. I am no real estate man whatever.

Mr. KEEFER. What was it you said? Navigation and something else?

Mr. McCORMACK. I did not mention anything else any more than navigation, but I said I thought 3 feet lower would practically do away with the average wash, and the back wash is practically all the damage that is being done on the lake.

Mr. ANDERSON. Prof. Prince is here, and I would like to call him.

Mr. LAIRD. Before Prof. Prince is called, I have obtained from the office of the county auditor a statement as to the assessed values of the land, and I have not brought the auditor for the two counties here, but I have these documents in the form of certificates and would like to file them with the commission. The certificate from the auditor of this county states that he is the auditor of the county of Roseau, State of Minnesota, and the person entitled to the official custody of the assessment books, and he certifies that the value of parcels of land described and improvements and structures thereon in 1915 is as shown below. What I did was to take the maps, when they came into my office, and made a list of the various parcels surrounding the lake and sent them to the auditor. Of necessity, they had to make some changes in the districts. That is, the assessments

were not in quarter sections, and they have made the changes and certified it under the seal and sent it back.

Mr. TAWNEY. They are now, as certified to by the auditor?

Mr. LAIRD. Yes.

Mr. TAWNEY. They will be received and marked "Exhibits G and H."

(Certificate of Roseau County, Exhibit G; certificate of Beltrami County, Exhibit H.)

Mr. LAIRD. There are pages of these lands that are marked "Not assessed," and they are probably irrelevant, but that is the position they are in.

Mr. TAWNEY. Not assessed because they are public land?

Mr. LAIRD. Probably.

Mr. GLENN. Are they any of the farm lands we have been investigating?

Mr. LAIRD. All the farm lands on the lake shore you have been investigating are here.

Mr. GLENN. Any of the people we have been hearing?

Mr. LAIRD. They are all there, but all the farm lands back from the lake are not there, because I simply take the description of the lands surrounding the lake. I find by telephonic communication with the auditor of the country of Beltrami that in filling in the value he has given necessarily the assessed value. As the chairman knows, the lands are valued under the laws of the State at their true and accurate value.

Mr. WYVELL. Theoretically.

Mr. TAWNEY. Under the law they have to be assessed at their true and accurate value.

Mr. WYVELL. It is not contended for a moment, as a matter of fact, that they are; we have the same law in New York, and I have yet to find a man who ever asserted that they are. They are not conclusive.

Mr. TAWNEY. They are not conclusive; but I say that under the law they are valued at their true and actual value; that is the law; and they are assessed at one-third of that value by the law.

Mr. BERKMAN. Theoretically, that is so.

Mr. LAIRD. The certificates are in the same form, and I mean that they should be the true and actual value. The audit office at Roseau tells me that is what they did, and the auditor for the county of Beltrami tells me he did not understand it that way, and he put in the assessed value, or one-third of what is shown in his books, as the true value; so that in the case of Beltrami County the figures will require to be multiplied by three to get the real value. The statements are very long, and I have had a computation made up from them, and I would like to put it on the record of the court, simply for the benefit of the commission, as it will save you some time. The certificates show where there are improvements—buildings and structures—and those buildings are valued in a separate column. The lands that are improved by buildings are apparently assessed at a higher rate than where there are no buildings. I suppose that is natural, but that is the fact. I find that the average assessment per acre of lands which have no improvements in the county of Roseau for this year is \$11.14 and that the average assessment of lands in the same county where there are improvements is

\$12.78, and in Beltrami County the average assessment of lands where there are no buildings is \$10.19. I am multiplying the figure in the certificate by three. Of land where there are improvements the average assessment is \$11.43. The acreage is given in these certificates, and I simply take the total acreage. Of course, the certificates as to the value and the various classifications by the engineers' reports are of not much value. It shows the value of the total farm in each of these sections.

MR. GARDNER. I would like to inquire, Is this true value placed upon the lands uniform? That is, is the same value placed upon the whole county?

MR. LAIRD. I am not very familiar with the laws of Minnesota. There are assessments for each township.

MR. CAMPBELL. For improved lands they differ. For the wild lands I am not clear. I was studying it and trying to find it out. I think wild lands may possibly be put down at so much an acre. The buildings vary up and down, some of them away up and some of them down.

MR. BERKMAN. If these are allowed to go in evidence as to the value of lands, I think we will ask to be allowed to put in the assessed valuation of those lands that are valued at \$75 an acre by Mr. Holdahl, and show what they have been put on the assessment roll at.

MR. MIGNAULT. Mr. Holdahl has not specified.

MR. BERKMAN. We will have him specify those lands that are worth \$50 and \$75 an acre, and they get a certificate from the auditor as to what they have been assessed at. Will that be satisfactory to the commission?

MR. TAWNEY. Yes. These are not accepted by the commission as proof, but simply a fact as tending to show relatively the value of the lands.

MR. GLENN. Why do you object to it?

MR. BERKMAN. It is not evidence.

MR. GLENN. It is some evidence of the value.

MR. BERKMAN. It is evidence of what they are assessed at, but whether the assessor did the right thing or wrong thing is not proved. We have not him here for cross-examination.

MR. MIGNAULT. There is no doubt it is not absolute evidence.

MR. BERKMAN. It is some evidence, and for that reason we will have Holdahl designate some of the lands in Roseau that are worth \$75 an acre, and show what they are assessed at, so that you can compare them with this.

MR. MIGNAULT. You might examine Holdahl and ask him whether the assessment of the lands in Roseau County represents their exact value, or whether it is higher or lower.

MR. TAWNEY. I do not think that is necessary, because nobody ever pretends, even under this statute, which requires a true market value to be taken, that any land is assessed at its true market value. They have an arbitrary assessment, and these assessment rolls—valuation rolls, as they are called—are material only as bearing on the question of value.

MR. CAMPBELL. That is all we offer them as.

MR. MIGNAULT. They are conclusive for the purpose of taxation, but not of the value of property, but if they go in I think Mr. Berk-

man should be allowed to show what the practice is. We know what the law is, but we want to know what the practice is, whether these properties are valued at their full value or below it. I think that would be fair.

Mr. CAMPBELL. I understand there is an original assessor for each town, is there not?

Mr. BERKMAN. Yes.

Mr. CAMPBELL. And the assessments are equalized at the county seat?

Mr. BERKMAN. They are equalized at the town board and then at the county seat.

Mr. CAMPBELL. I suppose Mr. Holdahl can not tell much about it.

Mr. MIGNAULT. That may be, but if Mr. Berkman can put in any other witness who has knowledge of it, I think it is fair to allow him to do so.

Mr. TAWNEY. Then I understand that if Mr. Berkman desires to obtain from Mr. Holdahl descriptions of the lands he referred to as selling at \$50 to \$75 an acre, and then to obtain from the county auditor the assessed value of these lands, according to the assessment rolls, he is to have the privilege of doing so; so that there is no use taking up time over it. Is there anything else?

Mr. WYVELL. My purpose is to be absolutely fair and as accurate as possible regarding the values, whether they are high or low. As to this question, I do not know what Mr. Steenerson would want to put in to offset it, but I think perhaps something should be done at a later time to point out in particular cases that these assessments may not be accurate. I say that from my general knowledge, because I know that in New York State, although the law is that property should be assessed at its actual value, it is assessed actually at two-thirds of its value.

Mr. TAWNEY. It is common knowledge that people evade the payment of taxes wherever they can, and if they can give a low assessment they will do it. I think the commission understands that.

Mr. WYVELL. The only suggestion I have to make is that Congressman Steenerson be given a copy of this assessment and be permitted to submit such a reply as he deems proper.

Mr. GLENN. You appear with him?

Mr. WYVELL. He is an associate of mine.

Mr. BERKMAN. I will send it to Mr. Steenerson.

TESTIMONY OF S. T. HOLDAHL—Recalled.

(S. T. Holdahl, having been recalled, testified as follows:)

Mr. ANDERSON. This witness is going to be asked particulars of the sales he put through—

Mr. TAWNEY. No; just to identify the properties he referred to when speaking of values.

Mr. HOLDAHL. If you wait a moment I will get an atlas and give it.

Mr. TAWNEY. Go ahead with the other witness.

Mr. ANDERSON. I do not like to start Mr. Prince and have his testimony interrupted. I think it would be much preferable if we could take it at a later stage. In connection with the evidence of land values, without waiving the position I took last night at all, I

might make this suggestion, that as far as I am concerned, I am anxious to do what I can to assist the commission in arriving at a conclusion about the land values, and I would be prepared to procure from the registry offices abstracts showing sales of land in this district.

Mr. KEEFER. Within a certain period back.

Mr. ANDERSON. Yes, covering a certain period of time, and file this with the commission, because that would be some evidence, and I think pretty fair evidence of the selling value of land.

Mr. TAWNEY. They would not be of any material assistance to the commission, because everybody knows that a conveyance does not always show the true value or true consideration for which the land is sold.

Mr. ANDERSON. It is only a suggestion, and it is entirely in the hands of the commission whether they wish that done or not.

Mr. BERKMAN. Mr. Holdahl will give us the lands worth \$50 to \$75 an acre.

Mr. KEEFER. Are these lands around the lake, or away inside?

Mr. TAWNEY. Lands that Holdahl testified to as being of a value of \$50 to \$75 an acre.

Mr. KEEFER. Then the assessment can go in evidence.

Mr. HOLDAHL. I do not believe I made that statement that they were worth that. I have not made any sales for that amount.

Mr. ANDERSON. That is not of any more value than the assessments, because he has not had any transactions.

Mr. GLENN. If you can show any were actually sold for so much, all right; but where he simply says he thinks they were worth that, it is a different matter.

Mr. HOLDAHL. I do not believe I can show any sale as high as \$75 an acre, because it is the farms that have been improved, and they have not been changing hands.

Mr. BERKMAN. Lands of inferior quality have been sold?

Mr. HOLDAHL. Yes.

Mr. CAMPBELL. Well, the proportion will run in that case as well.

Mr. GLENN. Let him give those he had a hand in selling.

Mr. WYVELL. If Mr. Holdahl is a qualified man and gives a value to a farm, it ought to be equally as good as the opinion of any assessor.

Mr. POWELL. I am with you, and I do not see how you can prove value in any other way. You get a man familiar with prices, and he gives his opinion. It is only a matter of judgment, after all, and somebody else may give another opinion; and then in cross-examination you can go into specific case on which he bases that opinion. That occurs in our courts every day.

Mr. MIGNAULT. The best evidence is actual sales.

Mr. POWELL. I do not think a judge would allow it in that way. He might give half a dozen cases and not give others which might have a bearing. A witness is asked, "Are you familiar with land values, and have you kept track of sales of land?" and so on. And then he is asked his opinion.

Mr. BERKMAN. Take the case of Servia Noyer; the north half of the northwest quarter, the northwest quarter of the northeast quarter, in section 25, and the southwest of the southeast, and the south-

east of the southwest, section 24, all in town 162 north, range 40 west; that is the land that you value at \$75?

Mr. HOLDAHL. Yes.

Mr. BERKMAN. And the land of Espeteth, the south half of the north half of section 25, and the northeast quarter of section 25, same town and range, and the land of A. H. Foss, at \$50 an acre, the southwest quarter of 25 in the same township?

Mr. HOLDAHL. Yes.

Mr. BERKMAN. The land of Nels Wald at \$75 an acre——

Mr. CAMPBELL. How close is the last one to the village?

Mr. BERKMAN. It is adjoining the village. The northeast quarter of section 23 and the east half of the northeast quarter of section 23, 162, 40 west; that is the same township?

Mr. HOLDAHL. Yes.

Mr. POWELL. Those descriptions are of lands you knew to have passed over at this rate?

Mr. HOLDAHL. No. They want to look up the assessment on those.

Mr. TAWNEY. Those are the tracts of land which you have estimated in your evidence to be worth from \$50 to \$85 an acre?

Mr. HOLDAHL. Yes.

Mr. TAWNEY. That is, the market value of such lands would be from \$50 to \$75 an acre?

Mr. HOLDAHL. Yes.

Mr. TAWNEY. Are those lands quite close to Roseau town?

Mr. HOLDAHL. Yes.

Mr. ANDERSON. How close?

Mr. HOLDAHL. They are within a mile or a mile and a half.

Mr. TAWNEY. Roseau village?

Mr. HOLDAHL. Yes.

Mr. TAWNEY. County seat of this county?

Mr. HOLDAHL. Yes.

Mr. BERKMAN. They are not put in as to value; it is just with regard to the assessment.

Mr. ANDERSON. They are evidence for what they are worth.

Mr. POWELL. You put them in for one purpose, and it is perfectly legitimate for Mr. Anderson to make any use of them when they are in evidence.

Mr. TAWNEY. If it is the desire of the commission to hear Prof. Prince, is there any objection to hearing him at 8 o'clock this evening?

Mr. ANDERSON. The only point is whether it would not be better for him to be heard at some subsequent meeting. I am willing he should be heard at any time.

Mr. TAWNEY. It is preferable he should be heard here for this reason: Warroad is the only place on our side of the line where the fishing interests are of any considerable consequence. Those interested in the fishing interests are nearly all residents of Warroad or reside in the vicinity of Warroad. I do not know whether the testimony of Prof. Prince would be offered with the idea of combating the testimony which the people of Warroad have been giving or not.

Mr. ANDERSON. It will, to a certain extent.

Mr. TAWNEY. If that is so, they should have an opportunity to examine him, with a view of testing the correctness of the testimony which he may give in his chief examination.

Mr. ANDERSON. The only question is that sufficient time should be given.

Mr. TAWNEY. It would be hardly fair to those representing the fishing interest on our side of the line to take his testimony at any other place, so I think we may proceed.

TESTIMONY OF PROF. EDWARD E. PRINCE.

(Prof. Edward E. Prince, having been duly sworn, testified as follows:)

Mr. ANDERSON. What is your official position?

Prof. PRINCE. I am Dominion commissioner of fisheries, Ottawa.

Mr. ANDERSON. How long have you occupied that position?

Prof. PRINCE. Over 20 years.

Mr. ANDERSON. For how long have you been familiar with the waters of the Lake of the Woods?

Prof. PRINCE. My first visit to this lake, I think, was in 1893 or 1894, and I have visited the lake on numerous occasions since then. The last time I was here I was international commissioner under the fisheries treaty of April 11, 1898, and I came here three or four years ago with Dr. Starr Jordan, who was the United States commissioner. We went over parts of the lake then.

Mr. ANDERSON. To what extent have you studied the fishing industry of the Lake of the Woods?

Prof. PRINCE. Well, I have had quite a continuous knowledge of the fisheries carried on, in the Canadian portion especially and to some extent in this portion of the Lake of the Woods, during the period that I mentioned—20 years.

Mr. ANDERSON. It has been suggested that in the course of the evidence that the fish are being depleted in the lakes—what do you say to that?

Prof. PRINCE. Well, the fisheries certainly have declined during the period that I have known this lake very, very seriously. Some of the fisheries which were extremely important when I first visited the Lake of the Woods are extinct now practically. I refer especially to the sturgeon fishing which, at one time, was of prime importance, one of the most valuable fisheries on the international boundary waters in the Lake of the Woods, and the whitefish fisheries have also declined very seriously.

Mr. ANDERSON. What is the cause, in your opinion?

Prof. PRINCE. The main cause which, as an expert, I should attribute this decline to is overfishing; and that is the testimony also of some of the most important experts who have visited the Lake of the Woods. Mr. Rathbun, of Washington, of the Smithsonian Institute, and Dr. Glencamp visited this lake, I think in 1892, and they declared that the fishing should be more restricted; that the fishing was far more extensively carried on than the resources of the lake would bear. I could quote from their annual report in which they state that.

Mr. ANDERSON. Is there any other cause that you know of?

Prof. PRINCE. I think that is probably the sole cause that the fishery authorities would find for the decline of the fisheries in the Lake of the Woods.

Mr. ANDERSON. What effect, in your opinion, would it have upon the propagation of the fish to have, say, higher water in the Lake of the Woods?

Prof. PRINCE. That depends upon the species of fish referred to. We may say, in a general way, that the fish in the Lake of the Woods are either fall spawners or spring spawners; the whitefish and trout are fall spawners; the yellow pike, or pickerel, as we call it in Canada, is a spring spawner, and the perch and the catfish and the suckers and all the inferior coarse fish are spring spawners. The fall spawners would not be affected by a rise in the water.

Mr. ANDERSON. When I say a rise in the water I mean a rise in the level of the water.

Prof. PRINCE. Well, I do not see myself that the fall spawners would be very much affected. The whitefish and trout and fish of that kind spawn in comparatively deep waters; they do not come up on shallow streams to spawn, whereas the spring spawners come into very shallow water and are readily seen spawning in very, very shallow water.

Mr. ANDERSON. In what way would a rise in the waters affect the spring spawners?

Prof. PRINCE. Well, they would be inclined to come into the flooded ground more; that is, fish, like suckers, perch, and catfish, would be likely to come in on flooded grounds. The yellow pike or pickerel has its own spawning grounds, and they are scattered very generally along the shores of the Lake of the Woods, and my experience is that the pickerel do not as readily as the suckers or inferior fish seek new spawning grounds. They are very true to their own grounds.

Mr. ANDERSON. It has been suggested in the evidence that the presence of the high water in the lake will practically drive the fish out of the Big Traverse. What have you to say to that—that the high water would drive the fish out of the Big Traverse?

Prof. PRINCE. Well, inasmuch as the superior fish—I refer to whitefish and fish of that class—are deep-water fish, which they have to fish for in a certain depth, they would not, in my opinion, be driven away very readily by a few feet rise or fall. The depths in which they live are not so seriously affected.

Mr. ANDERSON. Would it have any effect upon what we call pickerel?

Prof. PRINCE. The only instance in which I can recall pickerel forsaking grounds was due, not to a rise in water, but to a fall in water; that is to say, water coming down and the wind coming up made the water and the current in the spring very muddy, and they did not resort to those shallower areas on account of the water declining. That is really the only case in which I know of pickerel forsaking their grounds by a decline in water. I do not think a rise in water would cause them to forsake the grounds. I can not see any force in that.

Mr. ANDERSON. A suggestion has been made in the evidence that in one year the pickerel that were caught in the south part of the lake here were affected—you heard Mr. Marschalk give his evidence yesterday as to that—by apparently some sort of a disease?

Prof. PRINCE. Well, I have had a good deal of experience in regard to fish living in water which was dirty or muddy, and I can not

trace any disease in fish to that cause. For instance, the Fraser River, in British Columbia, is one of the muddiest rivers imaginable, and the salmon are there in countless millions. It is a famous fishery, and I never knew of any disease in salmon due to the presence of any mud washed from the banks, or gravel being washed down the Fraser, and I should attribute the case to which Mr. Marschalk refers to the presence of algæ, or organisms in the water, causing disease in the fish; especially the fact that they were not fit to eat after they were caught showed that it was due to some organic disease, not to organic matter in the water. This is quite a familiar occurrence in the Great Lakes, the presence in certain seasons—we can not account for it—of immense numbers of minute organisms in the water, which affect the fish. They become scaly, and, in many cases, die, or, at any rate, are not very good food, and that is due to an organic cause, not to mere floating mud or sand, which is inorganic, and can not produce disease.

Mr. ANDERSON. From your knowledge of the conditions of the levels of the water in the Lake of the Woods during the time that you have had experience with it, in your opinion, has it any injurious effect upon the fish at all?

Prof. PRINCE. Well, it could only affect the fish by interfering with the spawning ground. The whitefish has declined, but I am satisfied its spawning grounds, which are shallow, honeycombed rock and banks of gravelly nature, would not be ruined or seriously affected by a rise in the water. Therefore, the only injury, as I said before, the main source of injury to the fish of the lake, whitefish, sturgeon, and such fish, has been due probably to overfishing.

Mr. ANDERSON. You say you are familiar with the conditions on the lake, and have been for the last 20 years. Are there any conditions of the lake which you know of which have affected the propagation of the fish at all seriously?

Prof. PRINCE. Personally, I do not know of any natural cause such as you refer to causing injury to the fish.

Mr. ANDERSON. You are familiar, of course, with all the Great Lakes, international lakes between Canada and the United States? What have you to say, in your experience, as to erosion of the banks of the lakes?

Prof. PRINCE. That takes place in all our great lakes. In all our great lakes there are changes continually going on in the nature of the banks and shore line. Anyone who knows the great lakes knows how they vary in the course of a few years. Certain headlands are washed away, and I could myself point out a number of instances where the nature of the shore line has changed considerably under ordinary normal conditions.

Mr. ANDERSON. Does that affect the fish at all?

Prof. PRINCE. The fish in the Great Lakes generally have not been affected from that cause.

Mr. ANDERSON. It was suggested yesterday that by reason of high water the water was made muddy in the lake; what have you to say as to that?

Prof. PRINCE. I do not quite understand what you mean.

Mr. ANDERSON. A suggestion was made yesterday that, by reason of the high water, the shore of the lake was more or less washed away, and thereby caused muddy water and the fish deserted it.

Prof. PRINCE. Of course, on general principles, my observations have been that the deeper the water the clearer it is, and that the shallower the water the more inclined it is to become riley and muddy.

Mr. ANDERSON. Would you say that is so with regard to the Lake of the Woods?

Prof. PRINCE. I should say that was so with regard to the Lake of the Woods.

Mr. ANDERSON. Now, as between extreme fluctuations, or very considerable fluctuations, in the level of the water, and a condition where the levels were restricted, which would you say would be an advantage from the standpoint of fishing?

Prof. PRINCE. From a fisheries standpoint, I think a fair uniformity is really an advantage. I think the extreme fluctuations are apt to have an effect, especially, as I have said, on the spring spawning fish.

Mr. ANDERSON. In other words, an artificial condition might be better than a natural condition?

Prof. PRINCE. Well, in rearing fish we always found that to be the case. If we have a uniform level it is much better for the fish, and have plenty of water for them.

Mr. GLENN. You say that the spring spawners generally spawn in shallower water than the fall spawners?

Prof. PRINCE. Yes.

Mr. GLENN. One of the witnesses, yesterday or to-day, stated that when the water was high it would go up among the leaves and bushes, and so forth, and the fish would go up there and spawn, and the fish would be destroyed; that would be true?

Prof. PRINCE. Yes; that would be true of fish that would do that, but fish generally do not do that.

Mr. GLENN. Do the spring fish do that?

Prof. PRINCE. Suckers and jackfish are very fond of going into the drowned lands, but the yellow pike is less inclined to do that than such fish as I have mentioned.

Mr. GLENN. It would have an effect on catfish?

Prof. PRINCE. Yes; coarse fish—what we call wandering fish—who have not distinct spawning grounds.

Mr. GLENN. They are injured by going up and spawning on these grounds?

Prof. PRINCE. They are left high and dry.

Mr. ANDERSON. That is, assuming that the water recedes?

Prof. PRINCE. Yes.

Mr. ANDERSON. But, supposing the water is high and does not recede?

Mr. GLENN. I did not put it in that way. I said, coming up among the bushes and spawning. Even if the water remained, would it not have a bad effect on them?

Mr. ANDERSON. I do not think the professor understood it that way.

Mr. GLENN. If they come up and spawn where the water is shallow, among twigs and grasses, would it not have a tendency to destroy that spawn?

Prof. PRINCE. I do not think it would be quite so favorable as the natural spawning conditions, but at the same time I can testify

to fish spawning on drowned lands where the fish have spawned, and the United States collects millions of hatch fry on drowned land and puts them back into the lake when the water recedes.

Mr. GLENN. Would you say muddy water would not affect the spawn in any way?

Prof. PRINCE. Muddy water affects the spawn; yes.

Mr. GLENN. If the water comes up in the spring and is muddy, it does affect the fish?

Prof. PRINCE. Of course muddy water is not a good thing for spawn; there is no doubt about it, but at the same time drowned lands are not necessarily muddy. On these drowned lands I speak of spawn hatches out quite satisfactorily.

Mr. ANDERSON. Take the pike and the jackfish in Canada; where do we find them spawning?

Prof. PRINCE. Well, they spawn among bushes, the very ground you speak of as being drowned. The pike and jackfish are fond of going among the bushes, and they put their spawn right into the herbage.

Mr. ANDERSON. They do that in muddy waters?

Prof. PRINCE. Yes.

Mr. ANDERSON. They are the fish that frequent muddy waters?

Prof. PRINCE. Yes; jackfish spawn in those muddy areas.

Mr. ANDERSON. Preferably?

Prof. PRINCE. Well, that is their natural spawning ground.

Mr. ANDERSON. What do you say as to what steps have been taken to restock or replenish the fish in the Lake of the Woods?

Prof. PRINCE. I have paid a great deal of attention to that, and under the international commission Dr. Starr Jordan and I had a scheme for cooperation between the United States and Canada to replenish these waters. Most of you know that under that treaty no action was taken by the United States. Canada tried her best to carry out her part of the treaty. We drew up regulations, which I have here, for the Lake of the Woods and other international waters, and we suggested at the end of our report to the two Governments a large scheme of fish hatching. The only permanent steps taken in the Lake of the Woods have been taken by Canada in building a large hatchery, as has been already stated, at Kenora, and we have taken active steps to do what we can to make up for the decline of the fish in the Lake of the Woods.

Mr. ANDERSON. State shortly what is being done and state to what extent restocking is taking place.

Prof. PRINCE. I think that has been already stated to the commission.

Mr. ANDERSON. Mr. Marschalk's statement was quite correct.

Prof. PRINCE. Yes. I may add that we also wish to carry out a system of regulations, which we thought very necessary, and I believe there was quite a feeling among a lot of the fishermen and those engaged in the fish business in the United States part of the Lake of the Woods in favor of some such system as Canada has carried out since confederation—

Mr. TAWNEY. Are you acquainted with the reason why the United States has not agreed to the regulations for the purpose of carrying out or executing the treaty between Canada and the United States?

Prof. PRINCE. I really do not know the reasons. I do not know whether it is quite worth while going into them here, but I may say this, that all along the Great Lakes the most of the prominent men—I see some of them sitting here—were strongly in favor of action being taken.

Mr. TAWNEY. Was it because of opposition of the principal fishermen themselves?

Prof. PRINCE. It was not. It was due to one or two small sections; they held up the whole of the international waters in Michigan and Saginaw Bay. That was one of the reasons why it was held up—by a small section in Saginaw Bay.

Mr. TAWNEY. Has the treaty been ratified by the United States?

Prof. PRINCE. Should I go into that?

Mr. TAWNEY. I am under the impression it has not been ratified, and the trouble was with regard to the regulations.

Prof. PRINCE. The treaty specified that two commissioners should be appointed, and that these commissioners should go over the whole of the international waters together, which Dr. Starr Jordan and I did, and drew up appropriate regulations, which the two Governments undertook to put in force.

Mr. TAWNEY. And Canada has adopted them and put them in force and the United States has not?

Prof. PRINCE. Yes.

Mr. TAWNEY. But the treaty has been ratified, as a matter of fact?

Prof. PRINCE. Yes.

Mr. TAWNEY. And it is due to the opposition of fishermen in certain sections?

Prof. PRINCE. Yes; a very small section—small locality.

Mr. TAWNEY. Except that locality, the fishermen all along were in favor of it?

Prof. PRINCE. Yes. I am a fishery enthusiast, and I was delighted to find in the United States so much enthusiasm, and I said, "The time has come for united action between Canada and the United States all along our boundary waters," and I know a great many men in Warroad and other fishing centers regretted that it was not fully carried out.

Mr. TAWNEY. We have a representative of the Government of the United States present, connected with the State Department, and I trust that he may send to his department the statements that you have made regarding the merits of the regulations.

Mr. WYVELL. I am, indeed, very much interested in the professor's statement.

Prof. PRINCE. I found the fullest sympathy in the State Department in Washington and the Fishery Bureau—the same feeling from the President down.

Mr. MARSCHALK. Assume that the conditions stated by me yesterday as having occurred in 1905, and, to some lesser degree in 1915 are correct; taking into consideration the fact that pike perch, known as pike here, and on the Canadian side as pickerel, were accustomed, prior to these abnormal conditions, to live in clear waters; when those waters, under these conditions, became polluted, if these fish had clear waters in the same lake to go to, without having to go too far,

would they go to the dirty waters, in which they have not been raised in preference to the clear waters?

Prof. PRINCE. If the whitefish and pike perch spawning grounds were continually polluted with mud, it would certainly seriously affect them, but I think I stated that whitefish do not spawn in very shallow water.

Mr. MARSCHALK. I agree in everything, but I wanted to bring out that point, if you had any experience regarding that question.

Prof. PRINCE. No. I was judging by a report I had seen. I do not know the spawning ground of the pike perch in this section.

Mr. MARSCHALK. We have fish here who live and propagate in dirty water; they have been accustomed to it, but I am speaking of fish who have been accustomed to stay in clear water. On such occasions as I have described in the Big Traverse, in 1905, and also to some lesser degree in 1915, when the conditions I have referred to did exist, would those fish not leave for the deeper and clearer waters, instead of staying in the muddy waters to which they have not been accustomed?

Prof. PRINCE. There is a great deal in your statement that they would be inclined to resort to those waters.

Mr. MARSCHALK. You were speaking also of jackfish going into muddy basins, which is quite correct, in my own experience. I refer to Warroad River. Certain ditches lead into the Warroad River, and since those ditches have been established, the flood waters coming down empty the ditch waters into the Warroad River, and the waters of Warroad River, clear down to the dredged channel, are discolored by clay; they have a clayish color; some clay is carried through the ditches; there is hardly any restriction there. These jackfish are a very undesirable fish and are very destructive of other fish. Since those waters have come down in the spring and discoloured the waters of the river, they have not been successful in spearing those fish; they all claim there are not so many. Do you think that would occur, with your experience?

Prof. PRINCE. Well, I know so many places where the jackfish or pike are plentiful, notwithstanding the conditions you speak of, that I can not help thinking that the decline, as in the case of the sturgeon and other fish, has been due to excessive fishing, particularly in spawning time in spring.

Mr. TAWNEY. There is one phase of the question you have not referred to; what effect has the level of the lake, or the level of the waters in which fish are found, upon the feeding grounds of the fish?

Prof. PRINCE. That is a very interesting question. The feeding habits of fish are very variable, and I would have to just, in a few words, state what the effect would be upon different species. The jackfish which has been referred to, or pike, is a predacious fish, and will feed wherever there are young fish to feed on. The whitefish has his particular feeding grounds. They are not in shallow water at all. They feed upon small crustacea, or small water flies, or moss, or things which grow at considerable depth. The feeding ground of the whitefish are in considerable depth of water, and those two fish would not be affected very much, because the young minnows would be abundant, and for the whitefish I can not say that

the feeding grounds would be seriously affected by being in deep water. The pike perch is also a predacious fish. Mr. Marschalk will know better than I do, what they feed upon around here, but as a rule we find them feeding upon small fish, and upon moving things of various kinds in the water, and I should not attach very much importance to the destruction of feeding grounds. I think the fish would find plenty of feeding grounds, plenty of food, in the Lake of the Woods.

Mr. TAWNEY. How is it with reference to the yellow pike?

Prof. PRINCE. It is predacious, and would forage for food. If he could not get it in one place, he would feed in another place.

Mr. TAWNEY. Then there is no such thing as specific feeding grounds for any of the fish you have mentioned?

Prof. PRINCE. The whitefish has specific feeding grounds. My experience is that the sturgeon feed upon small clams, and they would go to where the shellfish are. Suckers and catfish feed anywhere. They wander about. I was interested to hear Mr. Marschalk yesterday in his evidence referring to the feeding of fish, because he gave me to understand that the feeding ground was the spawning ground of fish, but I think that is not quite your statement—that the feeding grounds of fish are their spawning grounds.

Mr. MARSCHALK. I had the whitefish in mind at that time.

Mr. TAWNEY. I understood him to say that the spawning grounds and feeding grounds were the same.

Mr. POWELL. I always had in mind that the directly contrary of that was the case, that fish do not spawn where they feed.

Prof. PRINCE. As a rule, they spawn in one area and forsake it for their feeding grounds; that is my impression. You refer to the whitefish.

Mr. MARSCHALK. That holds correct as far as the whitefish are concerned. Our experience is that yellow pike or pike-perch have a feeding ground; they will remain a longer time on their spawning ground after spawning, and their spawning grounds are the best fishing grounds. That is the principal catch in the Lake of the Woods.

Prof. PRINCE. I have had some experience in the pike-perch, and I know of cases where that would not apply; they appear at the spawning grounds at certain times, when they would not appear at any other time of the year. I know that in Lake Erie, Long Point, is a good spawning ground, and not a good fishing ground.

Mr. MARSCHALK. Your statement is also correct in that part of the Lake of the Woods that is somewhat south of the grand peninsula; it is shallow water. On the Traverse their spawning ground is also their feeding ground.

Mr. TAWNEY. As a matter of fact, it is not known where the feeding grounds of the salmon are?

Prof. PRINCE. That is very true, but they are evidently not the spawning ground; we know that.

Mr. ANDERSON. What is your opinion as to the statement Mr. Marschalk makes, as to the pickerel having the feeding grounds and spawning grounds in one place?

Mr. TAWNEY. Call them yellow pike instead of pickerel.

Prof. PRINCE. My only reply to that would be that in my experience yellow pike are predacious; they will feed on other fish. You find

other fish in their stomachs—fresh water crabs, and a great variety; they are predacious, and those as a rule are not found abundantly where the fish spawn. As a rule that is the case, and I can not understand in the Grand Traverse how the pickerel can find abundant food on the very same spots where they are spawning.

Mr. MARSCHALK. I can only state that I base that opinion on the catches that have been made here. I am familiar with the grounds on the south side of the grand peninsula. We have grounds on which we can catch yellow pike, but for a very short time when the season opens. The fishing on the Big Traverse provides yellow pike all the season through, and they also spawn on those grounds.

Mr. MAGRATH. Mr. Marschalk, I think you referred to the sediment found around the outlets of one of the canals?

Mr. MARSCHALK. Yes.

Mr. MAGRATH. Is there much sediment around the outlets of the canals—the ditches that come into the lake?

Mr. MARSCHALK. Yes.

Mr. MAGRATH. There is some?

Mr. MARSCHALK. Yes.

Mr. MAGRATH. I think you will find a great deal of sediment carried into this lake by the system of drainage canals that is being installed there, because the gentleman who was on the stand this morning said the slope of these canals was something in the neighborhood of 9 feet to the mile, and where you carry water at a fall of more than 2 or 3 feet, if it is a large body of water, as it is in this case, draining a tremendous area to the south here, you will have a large amount of sediment carried into this lake?

Mr. MARSCHALK. Yes, I quite agree with that. That has been my experience of the ditches we had emptying into the Warroad River.

Mr. ANDERSON. Mr. Chairman, as far as Prof. Prince is concerned, unless the commission wants to hear him on some point, there is nothing I want to examine him about. I would like to ask Mr. White a few questions. He prepared a table called "Total of areas between certain contours re Lake of the Woods." I want to place a copy of that on file.

(The table referred to was received and marked "Exhibit I.")

Mr. ANDERSON. That represents correctly the total of the areas between those contours, Mr. White?

Mr. WHITE. Yes, sir.

Mr. ANDERSON. As far as your judgment goes, it represents correctly the classification of the different kinds of land that you found there?

Mr. WHITE. It does according to the description which accompanies it.

Mr. ANDERSON. In the course of your investigations have you had occasion to refer to the narrative of Long's expedition of 1823?

Mr. WHITE. I am familiar with Long's report and had intended before coming here to look it over again, but under the pressure of circumstances in getting away I was not able to refresh my memory with respect to it.

Mr. ANDERSON. I want to refer to a page in Long's narrative of his expedition of 1823 which refers particularly to the sandy portion at the north of Rainy River that has been spoken of. I wish to refer

to page 110 in the narrative of Long's expedition, and to put in a photographic copy of it.

Mr. WHITE. I would mention that also as Keating's report. It is sometimes known as that.

(The photographic copy referred to was received and marked "Exhibit J.")

Mr. ANDERSON. Have you had occasion to refer to the report of the chief astronomer of the United States Boundary Commission with respect to the shore characteristics of the Lake of the Woods of 1872 to 1874?

Mr. WHITE. Yes, sir; I have referred to that. It is a publication from the Department of State or the Treasury Department of the United States. It is the official publication of the boundary commissioners.

Mr. ANDERSON. I want to refer to pages 53, 55, and 73 of that report relating to the characteristics of the Lake of the Woods and particularly the portion of it that we have been dealing with at this session.

Mr. POWELL. If you will supply the pages that you desire to put in evidence they will be received and marked as "Exhibit K."

Mr. ANDERSON. I want to refer to an extract from the report of G. M. Dawson, of the British-North America Boundary Commission, dated 1873, page 1600.

(The page referred to was received in evidence and marked "Exhibit L.")

Mr. GLENN. Mr. White, have you any record of what the level of the lake was prior to the building of that dam?

Mr. WHITE. We have some references but they are not very definite. As Mr. Anderson has just pointed out, in the testimony of Dawson, which was published in 1873, he gives a range there of 10 feet.

Mr. GLENN. What was the level prior to the building of the dam?

Mr. WHITE. We have not that information.

Mr. GLENN. You have no information on that at all?

Mr. WHITE. Only Dawson's information. We have the high-water marks established by Kennedy, for which testimony has before been given.

Mr. GLENN. Was not any record kept of the level of the lake prior to the building of that dam?

Mr. WHITE. Not that I know of.

Mr. GLENN. You do not know whether it was 1057 or 1058 or what it was?

Mr. WHITE. If you take the high-water marks as existent on the lake and as identified by Kennedy, you would have an elevation as given in the testimony here of approximately 1,062.5.

Mr. GLENN. As a natural level of the lake?

Mr. WHITE. As a natural level of the lake, or the level that the lake had come up to and left its mark under natural conditions. If you take a range of 10 feet from that you would come down to 1,052.5.

Mr. GLENN. You do not mean to say that the level of the lake prior to the building of the dam was as high as it is now with the dam in, do you, Mr. White?

Mr. WHITE. It was higher under natural conditions. The level of the lake reached higher elevations under natural conditions than it has since the dam was put in.

Mr. GLENN. And stood at that?

Mr. WHITE. For a period. That is evidence which is offered in the report of the consulting engineers.

Mr. POWELL. Speaking about extending the sources of information, the Canadian Pacific Railway must have somewhere a survey, because their line runs across the outlets of the lake. Did you go to their offices or to the Dominion Government to find the profile of the railway?

Mr. WHITE. Yes, sir.

Mr. POWELL. Did you get any information there?

Mr. WHITE. Yes, sir.

Mr. POWELL. What was that?

Mr. WHITE. We got information giving the profiles, but they were not able to tie the profiles one with the other. The Manitoba Hydrographic Survey were requested about two weeks ago, when we were preparing our manuscript, to see if they could get a further tie from one of the old bridge abutments over the Canadian Pacific Railway. In the report of the consulting engineers to the commission we draw attention to the fact that a bench mark which we had on one of these abutments as given by James C. Kennedy was not tied in sufficiently accurately so as to make it worth while publishing it, and when that matter was brought to our attention we requested the Manitoba Hydrographic Survey engineers to kindly tie that in.

Mr. POWELL. If that were tied in, would it throw any light on the situation?

Mr. WHITE. It may or may not. The Canadian Pacific Railway Co. thinks that the bridge abutment was not altered, but if you recall, in the city of Kenora a new railway bridge is alongside the old one, and on portions of the abutments the upper portions of the stonework have evidently been shifted; and unless we could secure from the Canadian Pacific Railroad or from other sources creditable information that the top coping stone upon which this bench mark was established had not been shifted we would not get a tie in and would have nothing to assist us.

Mr. POWELL. From your own observations, and not from profiles of the railway, were you able to determine the height of the natural bed of the outflow at Kenora?

Mr. WHITE. For that we have accepted the surveys of the Manitoba Hydrographic Survey and have published the results in a map which appears in our report.

Mr. POWELL. At what height, taking your sea datum, is the natural bed of the discharge?

Mr. WHITE. The natural bed, of course, varies at practically every point of its cross section.

Mr. POWELL. I mean the highest point. That would determine the level that it could not go below. It is of such tremendous importance that I feel like having you give us that information.

Mr. WHITE. The profile of the eastern outlet is shown on plate 24. The original high point as shown on the profile and read by inspection at this time is approximately 1,048. The profile on the western outlet is shown on plate 26. By inspection of the graph at this time it is read off as approximately elevation 1,046.

Mr. POWELL. Now give us the width as determined by the section that you made of the natural condition of that channel. What is the width of the bed of the channel?

Mr. WHITE. Of course, that varies at different stages of the water going through the channel.

Mr. POWELL. But I am talking about the bed of the channel.

Mr. WHITE. What do you mean by "the bed of the channel," Mr. Commissioner?

Mr. POWELL. You know what we mean when we talk of the bed of the stream.

Mr. WHITE. The bed of the stream being the portion of the stream that is covered by water would be different at different stages of the water.

Mr. POWELL. What you say is true. Then we will take the lowest crossline.

Mr. WHITE. The beds of the channel in the eastern outlet are shown by cross-sectional area on plate 28; and for the western outlet on plate 29.

Mr. POWELL. If Dr. Dawson's statement about the range of levels being 10 feet is correct, and it attained at some time a height of 1,062, which we may assume that he took as the higher level, the lowest range then would be 1,052, would it not?

Mr. WHITE. Approximately.

Mr. POWELL. Now, between the lowest point of the exit or discharge there would be at dead low water, according to Dr. Dawson's statement, only 6 feet of a run over the bed of the outlet.

Mr. WHITE. Four in one and six in the other.

Mr. POWELL. Now, considering the narrowing of the bed of those channels, would not that afford opportunity only of a very small discharge?

Mr. WHITE. Yes; the discharge would be much reduced.

Mr. POWELL. You have not figured it out?

Mr. WHITE. Yes; we could give an estimate of that. It is all figured out here in the report.

Mr. POWELL. At the different heights?

Mr. WHITE. Yes, sir. You have referred to this range given by Dr. Dawson of 10 feet. One would not wish to place weight on that figure in the same way that one would place weight on some of the figures carefully presented by us as a result of engineering research and observation. Dr. Dawson's work is to some extent and in places given in narrative form; and some of his data like this 10 feet may be intended to be only approximate; just as the consulting engineers, in speaking about some of the upper lakes along the boundary, have given approximately the range of levels of those lakes. Precise engineering observation might reach a finesse which would not be disclosed by the mention of a round figure.

Mr. TAWNEY. Mr. White, Gov. Glenn expressed some surprise that you were not able to give in your report any information regarding the level of the lake prior to the construction of the dam. When did the Government of the United States on our side first begin to take the levels of the lake officially?

Mr. WHITE. In 1899.

Mr. TAWNEY. When did they commence taking levels officially at the outlet of the lake?

Mr. WHITE. In 1892.

Mr. TAWNEY. That was the first official record in existence concerning the levels of the lake?

Mr. WHITE. I do not know that you would call those official records.

Mr. TAWNEY. Well, I mean official records; the first official or governmental records.

Mr. WHITE. All these data, of course, are in the report.

Mr. TAWNEY. But I wanted to get it in connection with your answer to Gov. Glenn's question.

Mr. WHITE. We have presented records here which are well accredited, so far as accuracy is concerned, from 1892. The earlier ones are the records of James C. Kennedy.

Mr. TAWNEY. The Kennedy records are the first?

Mr. WHITE. But not official.

Mr. TAWNEY. I want to ask you, then, what records there were previous to that time and if you verified the records as presented to you to know that they were genuine?

Mr. WHITE. The public works of Ontario records begin in November, 1898. The copy presented to the commission has been accurately checked with the original records on file at the Public Works Department in the Parliament buildings at Toronto.

Mr. GLENN. You found no records prior to the construction of that dam of any kind?

Mr. WHITE. Yes; we have the records of James C. Kennedy.

Mr. GLENN. I mean prior to 1898.

Mr. WHITE. There were two records which we have; the records of July 15, 1889, and July 15, 1890.

Mr. TAWNEY. Those are the Kennedy records?

Mr. WHITE. Yes, sir.

Mr. GLENN. Those are after the dam was built?

Mr. WHITE. Yes, sir.

Mr. GLENN. None before that time?

Mr. WHITE. No, sir.

Mr. KEEFER. Speaking of the range of levels that Gov. Glenn was referring to, has the construction of the dam at International Falls had any effect upon this range of levels?

Mr. WHITE. Yes.

Mr. KEEFER. Explain to Gov. Glenn, who is not familiar with the ground as we are, what effect that has had, so that he may also grasp it.

Mr. WHITE. About 62 per cent of the run-off contributed to the Lake of the Woods comes from the area of that watershed which is above International Falls. The entrance of that water from above International Falls to the Lake of the Woods is controlled by the operation of the dam at International Falls. Obviously the controlling of the dam in a manner to let more or less water through to come down to the Lake of the Woods would directly affect the levels of that lake.

Mr. KEEFER. When was that dam sufficiently under construction to affect that operation of levels?

Mr. WHITE. In 1909.

Mr. LAIRD. In connection with the Dominion project at Fort Frances, which was under construction in 1877, is there any informa-

tion relative to the levels of the Lake of the Woods in connection with that project?

Mr. WHITE. We obtained what records we could, and they will be referred to in our report.

Mr. LAIRD. Do they touch the Lake of the Woods level at all?

Mr. WHITE. No.

Mr. GLENN. Mr. White, you say that that record on the rocks showed 1,062 prior to the building of the dam?

Mr. WHITE. 1,062.5.

Mr. GLENN. You do not mean to say that showed what was the ordinary level of the lake at that time, do you?

Mr. WHITE. That level is well described by the terms in which it is referred to, namely, high-water marks.

Mr. GLENN. The reason I am asking this question is this: The gentleman said here to-day that he had records to show that prior to the construction of that dam the lake was 1,057 and a fraction. I do not know where he got these records. You say the only records you have show 1,062.5. That was a very high water mark.

Mr. WHITE. Yes, sir; and is so described.

Mr. GLENN. But you do not mean to say that was the ordinary level of the lake prior to the building of the dam?

Mr. WHITE. No, sir; we say that was an extreme high-water mark.

Mr. GLENN. What I was trying to find out was the ordinary level of the lake prior to the building of the dam. You have nothing to show what the ordinary level of the lake was prior to the building of that dam?

Mr. WHITE. No, sir.

Mr. GLENN. Did you examine any witnesses, old men, or anything of that kind?

Mr. WHITE. There was testimony submitted, I believe, at the former hearing.

Mr. GLENN. I was not here at that time. I just wanted to hear from you about it.

Mr. KEEFER. Gov. Glenn, Mr. Zippel says that the variation in one year was from 4 to 5 feet.

Mr. GLENN. I am trying to find out what the level of the lake was prior to the building of the dam.

Mr. KEEFER. You mean the difference between the highest level and the lowest level?

Mr. GLENN. Yes, sir.

Mr. MAGRATH. Mr. White, you have worked out in the reports presented the levels that would have existed since the construction of the dam if no dam had been there, have you not? That is probably what Gov. Glenn wants.

Mr. WHITE. Yes, sir.

Mr. MAGRATH. The engineers have no evidence as to the levels that existed before the dam was there, but they have worked out the levels that would have existed since that date if no dam had been put in.

Mr. MARSCHALK. From my close observation of lake levels for the last 20 years that I have been on the lake, as I stated here at the

hearings three years ago, I have worked out a mean level during every year from 1892 until the records were kept and were available here at Warroad by the engineers' department. In saying "mean level" I mean by that, as probably Mr. White and Mr. Meyer will understand, one-half between the extreme high and the extreme low levels. I have compared them with the natural levels as worked out by Mr. Meyer and Mr. White, and I find there is hardly any year in which I was over 2 feet out of the way. As far as I am concerned, I am perfectly willing to abide by the natural levels as worked out by the engineers. I think they are as nearly correct as it is possible for human intelligence to make them.

Mr. GLENN. The record shows the actual levels from 1,062 down to 1,057, and the computed natural level from 1,061 down to 1,053. I want to know what was the natural ordinary level of the lake prior to the construction of this dam.

Mr. TAWNEY. There is no record of it.

Mr. GLENN. We have had some testimony here to the fact that it was only 1,057. I am only trying to see if that is true or untrue.

Mr. POWELL. I think the engineer who stated that said it was 1,057 on a certain day. He did not say whether that was mean or high or low. He merely said that on a certain day he took that level. Mr. Meyer, you are an engineer of experience, are you not?

Mr. MEYER. Some little experience.

Mr. POWELL. Taking that situation at Kenora, with the factors being given you of the quantity of water and also of the capacity for discharge at the different levels, is it an engineering problem by which you can work out with substantial accuracy the determination of the levels?

Mr. MEYER. I should say we could do that with substantial accuracy, and we have other data than that indicated in your question—still further very good data aside from the cross sections, as you have referred to them in your question. But there is no doubt in my mind about the substantial accuracy of this result as an engineering problem, such as one might meet in his practice.

Mr. POWELL. As an engineering problem it could be worked out with substantially the same degree of accuracy as you would work out a problem in practice?

Mr. MEYER. As you might design a bridge.

Mr. TAWNEY. Mr. Meyer, you testified in the first part of the hearings as to how you arrived at the computed levels.

Mr. MEYER. In a general way, to give some idea as to how it was done. It is all extended in detail and in technical terms in the report.

Mr. GLENN. Do you remember my asking you that question in the car the other night about the level before the construction of the dam?

Mr. MEYER. I remember we did have some discussion.

Mr. GLENN. Did you not tell me you thought it was 1,057 at an ordinary level prior to the construction of the dam?

Mr. MEYER. Yes; I think my records here show 1,057.6 as the average level or the level that prevailed 50 per cent of the time.

TESTIMONY OF MR. PAUL MARSCHALK, OF WARROAD, MINN.

(Paul Marschalk, being recalled, testified as follows:)

Mr. BERKMAN. Mr. Chairman, I suppose it is conceded that Mr. Marschalk had acquaintance with the dam ever since its construction.

Mr. TAWNEY. Everybody knows that.

Mr. BERKMAN. You may state whether or not there has ever been any power developed over this Norman Dam.

Mr. MARSCHALK. Not unless it has been developed within the last month or so.

Mr. BERKMAN. During the time from the construction of this dam until the present time it has never developed any horsepower at all?

Mr. MARSCHALK. No; I think that is generally conceded.

Mr. KEEFER. What was it put in for?

Mr. MARSCHALK. That we do not know. I have no money invested in that project.

Mr. KEEFER. You never heard why it was put in?

Mr. MARSCHALK. I presume for the development of power eventually.

Mr. BERKMAN. It was put in to hold the franchise?

Mr. KEEFER. That is leading the witness.

Mr. MARSCHALK. Hearsay, as I understand it, does not count before this commission.

Mr. TAWNEY. Gentlemen, if there is nothing further to be presented to the commission at this time, this hearing will be closed.

In closing the hearing I desire to take this occasion on behalf of the commission to express our sincere thanks and appreciation for the attention we have received from the people of Warroad, and also that we appreciate the assistance which the people who are interested on the south side of the lake have given the commission in its effort to find the value of the land on the south shore of the Lake of the Woods that may be submerged at any recommended lake level. I wish in closing to again state that this hearing has not been for the purpose of making an award of damages that may result or that may have been sustained by the people on the south shore of the lake in consequence of the construction of dams at the outlet or on account of any change in the level of the lake. The two Governments must hereafter deal with that matter themselves. For almost 20 years there has been more or less contention on this side of the line that the damages which the people claim to have sustained were the results of acts committed upon the other side of the line, but until the creation of this commission, which represents both Governments, not one Government alone but both Governments, there was no tribunal through which the two Governments could act jointly for the purpose of arriving at an equitable and just settlement of the questions in dispute. Since the whole matter has been referred to this commission, we have through the aid of competent engineers obtained reliable data upon which we can now base conclusions. In making our report to the two Governments, however, we do not award damages. We are not authorized or required to do that. We are only required to state specifically from our investigations how much land would be submerged at any given level of the lake which we may see fit to recommend, and what the value of that land is. In determining these facts personally, I think, the rule that has been

suggested by counsel for the property owners during this hearing is correct, that we may take into consideration also the land that is injuriously affected by the actual submerging of land owned by riparian owners.

It has necessarily taken some time for the commission to proceed with this investigation as far as we have. There has been a vast amount of work to be done. Neither Government has made a topographical survey of the drainage area of the Lake of the Woods, and its boundary waters, an area in extent more than 26,000 square miles; an area greater than that of New England, exclusive of Maine. Hence the time consumed was necessary to the proper and efficient conduct of the investigation, and no more time has been occupied than was absolutely necessary to the proper conduct of the work.

I want on behalf of the commission to again express our thanks and appreciation to those who are present, not only the people of Warroad, but the representatives of both Governments, the representatives of the State of Minnesota and of the Province of Ontario, for the very valuable assistance which they have given the commission in endeavoring to arrive at a just and fair conclusion of the questions that have been submitted by the two Governments for our consideration and report. This closes the hearing at Warroad on this investigation.

(The commission thereupon, at 9 o'clock p. m., adjourned to meet at International Falls, Minn., Friday, September 10, 1915.)

INTERNATIONAL FALLS, *Friday, September 10, 1915.*

The commission, pursuant to public notice, met at International Falls, Minn., on the above-mentioned date, at 10 o'clock a. m.

Present: Obadiah Gardner, Charles A. Magrath, James A. Tawney, Henry A. Powell, R. B. Glenn, P. B. Mignault; Whitehead Kluttz and Lawrence J. Burpee, secretaries.

Also, Arthur V. White, of Toronto, and Adolph F. Meyer, of St. Paul, consulting engineers to the commission.

Mr. TAWNEY. Gentlemen, please come to order. The secretary will read the notice of this hearing.

(Secretary Kluttz then read the notice referred to, which is as follows:)

INTERNATIONAL JOINT COMMISSION,
Washington, D. C., July 22, 1915.

DEAR SIR: At the hearings held by the International Joint Commission at International Falls, Warroad, and Kenora, in September, 1912, it was announced that at a later date, when the consulting engineers had completed their surveys in connection with the levels of the Lake of the Woods, the commission would hold further hearings. At the same time it was announced that all interested parties would then be given an opportunity to submit such additional testimony as might be of service to the commission in making its final report to the Governments of the United States and Canada on their joint reference under Article IX of the treaty of January 11, 1909, of certain questions concerning the level of the Lake of the Woods. Included in said reference are the following questions:

"1. In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from that lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, is it practi-

cable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and if so, at what level?

"2. If a certain stated level is recommended in answer to question 1, and if such level is higher than the normal or natural level of the lake, to what extent, if at all, would the lake, when maintained at such level, overflow the lowlands upon its southern border or elsewhere on its border, and what is the value of the lands which would be submerged?"

In order that the owners of the land on either border of the lake may have ample time to prepare and be fully heard on the question of the value of their lands that would be submerged at any special level which the commission may recommend, and that the fishing and harbor and navigation interests may also be heard at the same time, you are hereby notified that the commission has fixed upon the following places and dates for that purpose:

At Warroad, beginning September 7, 1915, at 10 o'clock a. m.

At International Falls, beginning September 10, 1915, at 10 o'clock a. m.

At Kenora, beginning September 13, 1915, at 10 o'clock a. m.

All other interests involved in the final conclusions of the commission under the foregoing reference will be given an opportunity to be heard at a time and place hereafter to be fixed by the commission when the engineering data in relation thereto is available.

Very truly, yours,

WHITEHEAD KLUTTZ, *Secretary.*

MR. TAWNEY. Gentlemen, the commission would now like to have you give your names and the names of the parties whom you represent.

(The following appearances were entered:)

Manton M. Wyvell, Washington, D. C., representing the Government of the United States.

Edward Anderson, K. C., Winnipeg, Canada, representing the Dominion of Canada.

W. J. Stewart, Ottawa, Canada, chief hydrographer for the Dominion of Canada.

J. B. Challies, Ottawa, Canada, superintendent of water power for the Dominion of Canada.

Frank H. Keefer, K. C., Port Arthur, Ontario, representing the Province of Ontario in respect to all interests involved.

H. G. Acres, Toronto, Canada, representing the hydroelectric power commission of Ontario.

Isaac Campbell, K. C., Winnipeg, Canada, representing the city of Winnipeg.

C. J. Rockwood, Minneapolis, Minn., representing the Rainy River Improvement Co., the Minnesota & Ontario Power Co., the Keewatin Lumber Co., the Ontario & Minnesota Power Co. (Ltd.), and the Fort Francis Pulp & Paper Co. (Ltd.).

D. H. Laird, Winnipeg, Canada, representing the Winnipeg Electric Railway Co.

C. E. Berkman, Chisholm, Minn., representing the interests in the sixth congressional district.

Clifford L. Hilton, St. Paul, assistant attorney general, State of Minnesota.

J. A. O. Preus, St. Paul, auditor for the State of Minnesota, representing the State of Minnesota.

John E. Samuelson, Duluth, Minn., representing 35 settlers on Rainy River, Rainy Lake, and the tributaries thereto on the American side of the boundary.

MR. TAWNEY. When the commission was here three years ago it was for the purpose of obtaining preliminary information for the use of the consulting engineers in the working out of the engineer-

ing problems which were involved in this investigation. At that time it was stated that later in the investigation an opportunity would be given to all who are affected in any way by the level of the Lake of the Woods and its tributary waters to be heard fully. Since that time the commission has caused to be made a thorough and a complete survey of the drainage area of the Lake of the Woods and its tributary waters, an area in extent more than 26,000 square miles. These surveys show just what lands will be affected at the various levels of these waters, which levels are shown on the maps by contour lines. This hearing will be limited, first, to the lands that would be, as shown by the maps, submerged at any of these levels described on the maps and lands that may be injuriously affected in consequence of the levels of the waters of Rainy Lake and its tributary waters; and, also, the navigation interests will be heard as to the effect upon navigation of any of the levels which may hereafter be agreed upon by the commission and reported or recommended to the two Governments. It is not the function of the commission at this time or in this investigation to award damages to anyone who may have sustained damages in consequence of any level.

The first question that the commission is called upon to investigate and report on is the most advantageous use of these boundary waters for purposes that are described in the first question, and also to ascertain and report upon the natural or normal level of the Lake of the Woods, and what level would best subserve the interests of the people on both sides of the line, and whether or not the level recommended can be maintained. We are also required to report what amount of land would be submerged at the level recommended to the Governments, and what the value of the land is. It would then be for the two Governments to determine, if they adopt the conclusions and recommendations of the commission, how they will award damages. It may be by reference again to the commission or in any other manner that the two Governments may deem advisable or necessary for that purpose.

I want to make it clear that it is not within our power under the reference to make an award for damages sustained on account of the level of these lakes. We are simply to ascertain in any way that we see fit the value of the land that would be submerged, and to report our conclusions in respect to that value to the two Governments. In ascertaining that value we have adopted, first, the usual method employed in the courts, namely, of having those interested in the ascertainment of the values testify or bring testimony before the commission as to the reasonable market value of the land overflowed and also the extent of land injuriously affected, just as you would prove the same fact in a court of justice in either country. The commission may hereafter, if the testimony is not full and complete, adopt some other plan of supplementing this testimony as to land values, but for the present the hearing is for the purpose of having those interested testify before the commission, and the examination of witnesses will be conducted the same as the examination of witnesses would be conducted in the courts of either country.

It is suggested that our time here is necessarily limited and that in the conduct of the hearing gentlemen should as far as possible confine themselves to the material facts in order to save time and conclude the hearing as soon as possible.

Now, I think it would facilitate matters, perhaps, to have one of the engineers explain the surveys on Rainy Lake and its tributary waters, what these contour lines show, and what the character of the shores of the lake is, before we proceed, and also have him explain these maps. There are four or five sheets showing Rainy Lake and the waters tributary to the lake, which the engineers will explain before we proceed to hear other witnesses.

STATEMENT OF ARTHUR V. WHITE, OF TORONTO, CANADA, CONSULTING ENGINEER, INTERNATIONAL JOINT COMMISSION.

Arthur V. White, recalled, made the following statement:)

Mr. WHITE. Mr. Chairman and gentlemen: In seeking to ascertain the extent of the areas which would be subject to flooding if Rainy Lake were held at certain stages, the first thing we did was to have a reconnaissance examination made of practically the entire shore line of Rainy Lake. We found more especially in the northerly portion of the lake (that portion which lies in Canada) that the areas which would be subject to flooding were relatively small and in isolated patches. In our report we will submit a list of the more prominent of these smaller areas, comprising probably in the neighborhood of 80 parcels and, in all, involving between the 497 and the 501 contours an area of between 2,000 and 3,000 acres. Inasmuch as these areas will be separately described in the report, it will be unnecessary to pay attention to them, I believe, during these hearings.

After having made this reconnaissance examination there were just like certain large areas, more particularly on the south shore of the lake, which demanded special surveys. These surveys were made. The results are shown on four maps, designated as the Rainy Lake series and consisting of four sheets. Sheet No. 1, Rat-Root River sheet; No. 2, Black Bay sheet; and No. 3, Cranberry Bay sheet, are all in the United States; and sheet No. 4, Stanjikoming Bay, comprises two areas, both in Canada, one in the vicinity of Little Otter-tail Lake and the other in the vicinity of Stanjikoming Bay.

Mr. TAWNEY. As I understand you, Mr. White, your surveys of these waters tributary to Rainy Lake are limited to those that constitute a part of the international waters? Your surveys do not include lakes outside of the international waters?

Mr. WHITE. No, sir.

Mr. POWELL. Take, for instance, a sheet of water which might be called by another name but not connected by a strait with another body or connected by a strait with Rainy Lake, you would call that a portion of Rainy Lake and that would be included, would it not?

Mr. WHITE. If it were a bay of Rainy Lake, as, for instance, these tributaries here [pointing to map] are tributaries which directly run into Rainy Lake at practically the same level.

Mr. POWELL. They are connected by waters of the same level, practically?

Mr. WHITE. Yes, sir. In making these surveys we, at all times, had reference to the township plats of the United States General Land Office covering the same territory. On the maps will be found notes which may be represented by the following: "The shore line which we have shown corresponds closely to the shore line shown on the

township plats of the United States General Land Office, based on surveys in years which are filled out on each particular sheet according to the dates of the surveys. A comparison between the shore line on the land-office plats and on our maps, as determined by our own surveys, shows a close correspondence." This will result in a comparatively ready identification of the various parcels of land.

On the map we have shown the water in a full blue tint up to the shore line just mentioned. Above the shore line our first contour is at elevation 497 and is shown on the map by a heavier brown line than the line which designates the other contours.

Mr. POWELL. What would that be in the ocean or sea level data?

Mr. WHITE. Any of the elevations given on these maps, which are in terms of the public works datum, may be reduced to sea level by adding 611.61. The area between the shore line shown on the map and the 497 contour is shown in a light blue tint. This light blue tint, therefore, represents the area of land which would be subject to flooding if the stage of Rainy Lake were at 497. Our surveys extended to contour 501. The culture symbols which we have employed to represent the growth over the areas surveyed are shown on the map. A brief description designating what these respective symbols represent will be of assistance. In our published report, which will be ready before long, a full and complete description of every symbol will appear.

Before closing my remarks I will mention the quantities of certain areas, but now, while the matter is in mind, I will state that while these areas are given to the decimal of an acre we do not wish it to be understood that any surveys or measurements which we have made could be depended upon to any such preciseness.

Mr. POWELL. That is to the fractional part of the acre?

Mr. WHITE. That is to the fractional part of the acre; yes. The reason we have kept these fractional parts is this: Numbers of the areas with which we are concerned were very close one to the other in magnitude, and if we began rounding out our figures we would have quantities which could not preserve their identification for purposes of reference. Therefore, whatever measurements we got as the result of careful determination in the office we have preserved, as I say, just with the object of having such, respectively, preserve their own identity.

Under the heading "Cultivated land" are listed all lands that were under cultivation at the time of the surveys, or that gave evidence of ever having been worked with the object of producing in the past, any field crops. There were certain areas which appeared to have been broken by the plow at some prior time and which with comparatively little trouble might again be brought under cultivation. Wherever such conditions existed these lands have been included under the classification "Cultivated land."

Under the classification "Grass land" is placed any land cleared of both timber and medium or heavy brush which affords evidence of having never been plowed, and also those small open areas on which true wild hay may be found mainly along the upper reaches of streams. "Grass land" classification, however, does not include land which, while cleared, was found to lie at an elevation low enough to permit the water to overflow it for periods sufficiently long to render

the grass growth practically worthless for feeding purposes. "Grass land" for the most part lies adjacent to the shores of creeks or streams.

Under the classification "Deciduous trees" are placed poplar, birch, elm, ash, and oak. This, approximately, is the order of the combined extent and value of this group, of which poplar is the most prevalent. On the drier arable land poplar, birch, and elm are found and ash on the swampy ground. Scrub oak, usually subsisting on rocky soil, is the only variety of this tree found within the areas covered by the surveys.

Under the classification "Mixed deciduous and coniferous trees" are placed the deciduous trees just mentioned when found associated and intermingled with the coniferous, namely, spruce, balsam, cedar, or pine, and occasionally tamarack.

Under the classification of "Mixed deciduous and coniferous trees," so far as tree growth is concerned, the areas are usually productive of trees of fairly large size.

Under the classification "Coniferous swamp" we have the land upon which is found the smaller tamarack, spruce, balsam, or cedar. Generally speaking, the growths on these lands, except in instances where poles, fence posts, and some railroad ties may profitably be marketed, are not commercially valuable.

On our maps there are considerable areas under the classification of "Willows and brush." The willow growths met with are chiefly of two kinds, namely, the large diamond willow and the small red willow. Diamond willows grow in bunches or clumps, attaining a height as great as 12 or more feet. Each bunch is usually made up from, say, 6 to 12 separate stocks, each about $2\frac{1}{2}$ inches in diameter. The willows are not found growing on bog which is actually floating. They require soil that has some substance, although it requires to be swampy or at least well saturated with moisture. This requirement of soil explains why these willows are usually found along the outer edge of the tree line, and often extend out as far as the commencement of the floating bog. The willows are sometimes found dead, but still standing in several feet of water well out toward the lake. This is probably accounted for by the fact that the roots of the willows had penetrated into soil which was firm enough to prevent the tree floating to the surface under the influences exerted by increased stage of water. Where willows have been thus encroached upon by deep water for any considerable time, as for example, for a season or two, they have died. Dead willows are found not only at the edge of the deeper water out toward the lake, but also where they have been growing on gradually sloping bottom, along what might be termed the "line of the willows proper."

Alder brush, which has been included under this classification, possesses much the same characteristics as the diamond willows, the principal difference perhaps being that the former is found on somewhat drier ground and its growth is more dense. Alder brush is found growing along the low ground bordering small creeks or draws and is frequently found interspersed with mostly diamond and red willow.

Red willows are smaller than diamond willows. The height to which they generally attain is not more than about 5 feet. They do not grow in water nor in clumps like the diamond willows. Prob-

ably the greater portion of the red-willow growth embraced within the surveys is on land partaking more of the nature of the cranberry muskeg.

It will be noticed from these comments that with the stage of Rainy Lake at 497 very considerable areas of land upon which these willow growths occur have been flooded already, and the inference is that the willow growths could not have sprung up as they exist under that stage of water.

We have also the classification "Open marsh or bog," applying to these four sheets, but we find here much more marsh than bog land.

The marsh land is land, generally speaking, which has become overflowed, but where the conditions of submergence have not been such as to loosen the sod and permit it to either come to the surface, or slough away. These are all the classifications that it will be necessary to refer to here.

With regard to the extent of the areas, these data will later be set forth in the report in detail, but in order to give some conception of the extent of these areas, the following quantities may be mentioned at this time:

The area of cultivated land in the United States is 44.1 acres; in Canada, 10 acres; grass land, United States, 77.1 acres; Canada, 18.6 acres; deciduous trees, United States, 1,803.4 acres; Canada, 183.9 acres; mixed deciduous and coniferous, United States, 694.8 acres; Canada, 411.8 acres; coniferous swamp, United States, 1,851.8 acres; Canada, 87.8 acres; willows and brush, United States, 4,044.7 acres; Canada, 379.7 acres; open marsh or bog, United States, 796.8 acres; Canada, 322.4 acres. In Canada there was also an area of 30.1 acres of rock. The totals are, United States, 9,312.7 acres; Canada, 1,444.3 acres.

All the quantities just submitted refer to the areas between 501 and the old shore line, and, as just mentioned, these areas are given with the idea of permitting the audience to form some conception of the magnitude of the quantities ascertained.

Mr. TAWNEY. These areas are on Rainy Lake and its tributary waters?

Mr. WHITE. No; I would not say that. They are on Rainy Lake and the waters tributary to Rainy Lake at the same level. We have a separate survey covering the tributary waters above Kettle Falls.

Mr. TAWNEY. Did I understand you to say that these areas are between 501 and the old shore line?

Mr. WHITE. Down to the old shore line; yes.

Mr. TAWNEY. That is taken from the 500 bench mark here at the bridge?

Mr. WHITE. Yes, sir. Just by way of comparison, the area between the 497 contour and the old shore line for both countries is 6,150.4, as contrasted with the quantity 10,757.

Mr. TAWNEY. So there would be about 4,000 acres between 501 and 497.

Mr. WHITE. Yes, sir.

Mr. MIGNAULT. What does 501 correspond to, Mr. White, in elevation?

Mr. WHITE. You add 611.61 to those figures to get the sea-level datum.

Now, referring to the surveys made above Kettle Falls, I would state that the maps covering these surveys are at present in the press. There is just one proof of one of them here. That was all we were able to get through.

Mr. TAWNEY. Have you computed the areas that would be affected at the different levels?

Mr. WHITE. Yes, sir; but I thought we would give only those figures that would probably answer the purpose of the meeting.

Mr. TAWNEY. Will you please state those figures for the record?

Mr. WHITE. By way of conveying some idea of the magnitude of these quantities, I will read the areas as ascertained between the water level as formerly existent on Lake Namakan at the time of our surveys, and the 510 contour—the 510 contour being the public works, Canada, datum: Cultivated area, none; grass land, United States, 645.5 acres; Canada, 292.5 acres; coniferous swamp, United States, 1,000 acres; Canada, 257 acres; deciduous trees, United States, 1,285.5 acres; Canada, 552.5 acres; coniferous swamp, United States, 1,479 acres; Canada, 132 acres; willow and brush, United States, 1,468 acres; Canada, 641.5 acres; open marsh or bog, United States, 1,853.5 acres; Canada, 233.5 acres; total for the United States, 7,731.5 acres; Canada, 2,109 acres; grand total, 9,840.5 acres.

By way of comparison with the grand total, the area between the water level and the 505 contour is 4,057.5 acres; and between the water and such portions of the 515 contour as was comprised within the limits of our surveys is 13,041 acres.

The 505 contour represents, as observed by the consulting engineers, quite approximately the line of demarcation between water growth and land growth, or that line at which land vegetation may be distinctly observed to have lost its identity.

Mr. TAWNEY. That is on Lake Namakan?

Mr. WHITE. Yes, sir; and the surveys of the areas given comprise the lakes affected by the dam at Kettle Falls.

Mr. TAWNEY. Including Kabetogama?

Mr. WHITE. Including Namakan Lake, Kabetogama, Sand Point, Crane, and Little Vermilion.

Mr. TAWNEY. If there are any gentlemen here who wish to ask Mr. White any questions regarding the statement he has made with respect to the surveys and the data which he has furnished, they are at liberty to do so.

Mr. SAMUELSON. Mr. White, you have computed certain areas as cultivated lands. Were you able to ascertain what land had been cultivated of the land that is at present flooded by the stage of water there is maintained in Rainy Lake?

Mr. WHITE. To give you a satisfactory answer to that question I would have to refer to the field sheets. I would at the present time venture the opinion that there may have been areas under the water which it was not possible to ascertain, and there may have been areas under the water which may have been at some time subject to the plow, a possible fact which it might be quite impracticable for us engineers to have discerned.

Mr. SAMUELSON. So that the cultivated area that you have spoken of now is the cultivated area from the point where the water reaches at the present time up to the 501 bench mark as represented on your map here?

Mr. WHITE. We have in the United States an area of cultivated land to the extent of 3.9 acres below the 497 contour and above the shore line; that is to say, this area that is represented here as subject to submergence with the lake at a stage of 497. Does that answer your question?

Mr. SAMUELSON. Yes. Of course, you could not make any examination of the land that is already covered with water to ascertain whether or not that had actually been under cultivation?

Mr. WHITE. Not if it were down low enough. I have tried to indicate that in my answer. That is the reason that I asked if you got the answer satisfactorily from your standpoint.

Mr. TAWNEY. Mr. White, in that connection, I desire to ask what 497 on this bench mark represents, as to the natural level of the lake?

Mr. WHITE. That would involve the question that has been up so often as to the definition of normal level. With the desire to answer your question and yet not introduce, so to speak, what might be a definition of the term "normal," I think I could answer the question satisfactorily.

Mr. TAWNEY. Answer it in any way you see fit.

Mr. WHITE. 497 is the crest of the dam of the Minnesota & Ontario Power Co.; but it does not follow that when the water is at the crest of the dam and backs the water up to Rainy Lake that Rainy Lake is at the same stage. As a matter of fact, the lake level approaches about a foot higher. Even the stage of 497 in Rainy Lake is an unusually high stage, especially if regarded with respect to time; that is, to hold the lake at 497 for any considerable time would be to evoke exceptional conditions.

Mr. MIGNAULT. 497 is an extremely high stage, is it not?

Mr. WHITE. Yes; I would say that it is within the range of extreme high stages. One has to be guarded in using up all his adjectives in respect to stages or there may be no suitable word left to describe something higher.

Mr. MIGNAULT. Have you computed, as you did in the case of the Lake of the Woods, what would be the level of Rainy Lake in a state of nature, supposing there were no obstructions which might raise the level of the water?

Mr. WHITE. Yes; we have made computations which will appear in our report.

Mr. MIGNAULT. Are they published in this second volume?

Mr. WHITE. Yes.

Mr. TAWNEY. If there are no further questions to be asked Mr. White, Mr. Meyer may proceed with his statement.

STATEMENT OF ADOLPH F. MEYER—Recalled.

Mr. MEYER. Mr. Chairman and gentlemen, the third question of the official reference refers in these terms to the regulation of the level of the Lake of the Woods by means of control of the inflow into the lake:

In what way or manner, including the construction and operation of dams or other works at the outlets and inlets of the lake, or in the lakes which are directly or indirectly tributary to the lake or otherwise is it possible or advisable to regulate the volume, use, and outflow of the waters of the lake so as to maintain the level recommended in answer to question 1?

Something over 60 per cent of the total run-off from the watershed tributary to the Lake of the Woods comes from the watershed tributary to the Rainy River at this location—International Falls and Fort Frances. Consequently you can readily see that the control of inflow into the Lake of the Woods has a very definite bearing on the regulation of the levels of that lake. So that it is necessary in our studies for us to determine the extent to which the inflow could be regulated by storage on Rainy Lake and the tributary waters. In order to do that it was necessary, first of all, to determine what the run-off is from this watershed above International Falls and Fort Frances. We had sufficient records to enable us to determine with substantial accuracy the run-off from the entire watershed tributary to the Lake of the Woods for the period of years from 1892 till to-day. Our records covering the run-off from the upper Rainy watershed are limited substantially to the period from 1905 to to-day. It was possible, however, with the aid of some of the early records and of the records taken since 1905, and with the aid of meteorological data for this particular watershed to compute what the run-off was previous to 1905 with substantial accuracy.

Without going into this matter in detail, which is discussed fully in our report, I would just refer briefly to the method in which these computations were made. In the first place, it was necessary to determine the rate of outflow under various methods of control. In deducing these curves of outflow—that is, curves indicating the rate at which the water would flow from the lake at various stages in the lake—we found some conflicting records, but were able to reconcile these reasonably well; so that we believe our conclusions represent the true conditions with substantial accuracy, although, for the benefit of those who were not present at the hearing at Warroad, I would say that the accuracy with which we were able to determine the outflow from the Lake of the Woods is better than the accuracy with which we were able to determine the run-off from the upper Rainy watershed and the rate of outflow under natural conditions, because we were much more limited in available data at this point than we were at the outlets of the Lake of the Woods. But, as previously stated, I believe we were able to determine these results with substantial accuracy. There were certain records available dating back as far as 1874. We have other records of 1895, being records of fall between the lake and the water level above the falls, and with the aid of all these available records we constructed the rating curves of outflow from Rainy Lake in a state of nature, as represented on plate 83. You will note that there are a number of curves shown on this plate. You will note that the curves diverge at the lower end, representing various conditions of the channel at the crest of the falls. The data were not conflicting in any substantial degree, so far as the higher stages were concerned.

You will note that there are two curves with the higher stages, one representing the rate of outflow for various levels in the lake and the other representing rates of outflow for various levels above the falls. You will note by the platted points that the “above falls” curve is well defined up to stages as high as 494.4. You will note that the fall between the lake and the water level above the falls varied in a state of nature. There is one record, being that of Mr. Fanning, which indicates a fall of only about 1 foot at the low stages. We

have other records, particularly those of Mortimer and Hazelwood in 1874, indicating 2 feet of fall, corroborated by further later data. There are other records that indicate changes at the crest of the fall, the extent and cause of which we are not ready to state. The principal data pertaining to the computation of the outflow from Rainy Lake in a state of nature are shown, further, on plate 106. This plate shows, first of all, for every month of the year since October, 1892, the average precipitation and temperature for the three principal watershed subdivisions; that is, for the upper Rainy watershed, the lower Rainy watershed, and the watershed of the Lake of the Woods proper. The upper two curves show the inflow into the Lake of the Woods, which, as previously stated, was determined with a relatively high degree of accuracy. Then we have the outflow from Rainy Lake in equivalent inches depth over the drainage area of 26,750 square miles. That curve is shown in those units, so that a more ready comparison might be had of the relative rates of run-off from the two portions of the watershed. It is virtually a unit basis. The middle curve shows the inflow into Rainy Lake in equivalent inches depth on the drainage area of 26,750 square miles, and the lower curve shows the water level for Rainy Lake, referred to the department of public works datum; that is, the 500 datum to which we have referred.

Without going into the detail as to how these curves were derived, I might say that a study was made of the characteristics of the watershed, as reflected in the run-off from the entire watershed tributary to the Lake of the Woods and the upper Rainy watershed, in the records of the last 10 years, and that with the aid of meteorological data the records were extended back to 1892; that is, were estimated and computed. Reference has been made to varying amounts of fall between the lake and the dam under present conditions. This information is shown graphically on plate 86, on which is shown the relation between controlled outflow stage and fall. For any given stage of water above the falls, or above the dam rather, the fall increases with increased discharge, and for the same rate of discharge the fall increases with reduced stage above the falls; that is, for the same discharge the lower the stage above the falls the greater the fall necessary to carry the water from the lake to the dam. For a discharge of about 10,000 cubic feet per second and a stage of 495 above the falls there is a fall of about five-tenths of a foot between the lake and the dam. Studies were made, not only of the power which would become available at this point under certain methods of regulation and with certain amounts of storage capacity, but also of the levels that would have prevailed under certain conditions of regulation that actually did prevail during the past five years, and that would have prevailed, according to our computations, under natural conditions. Some of these results are shown on plate 129.

The period of years from March, 1909, to December, 1913, covering a rather unusual period of rainfall hardly representative of long-term meteorological phenomena, naturally shows a quite different curve of computed natural levels from that shown for a longer period of years. In the upper half of the plate there is given the computed natural level for the period of years from March, 1909, to December, 1913, and also the curve showing the computed and

estimated natural level from 1892 to 1913, in addition to the full line curve showing the actual level from March, 1909, to December, 1913. It appears from this that, so far as the level which actually prevailed during the past five years is concerned, that 50 per cent of the time the level was above 493.5 and 50 per cent of the time it was below that same elevation; that 50 per cent of the time, if there had been no control of outflow, the level would have been above approximately 489.7, and 50 per cent of the time below that level; that considering the longer period of years as representing more nearly the natural regimen of levels, 50 per cent of the time the level would have been 491 and 50 per cent of the time below that elevation. It also appears from these curves that the lowest level reached under the condition of control was 487.4, approximately, and the lowest level which would be reached if there had been no control is 486.3, approximately. The highest point reached under the condition of control is 497.3. The highest level that would have been reached under natural conditions appears from the graph a little over 497.5. The level which under natural conditions would have prevailed for 10 per cent of the time is 495; that is, for 10 per cent of the time, according to our computations, under natural conditions the level would have been above 495 and for 90 per cent of the time below that elevation. On the lower half of the plate are shown the curves of outflow.

As might be expected from the curves of actual and computed natural levels for the period of years from 1909 to 1913, which indicate a greater fluctuation in level under the condition of control, we note a more equalized outflow, although the extremes of outflow during that period do not differ substantially except for a very small proportion of the time, when the actual outflow dropped to a low point. It appears also that, according to our computation, the lowest natural rate of outflow was reached during this period of dry years, from 1909 to 1913, inclusive. But the highest discharge which would have prevailed under natural conditions, considering a longer term of years, is about 24,000 cubic feet per second, whereas the highest controlled rate of outflow during the past five years was about 12,000 cubic feet per second, and that is also practically equal to the highest rates of outflow which would have prevailed under natural conditions during this same period of five years.

On the succeeding plate, 130, we show briefly frequency curves, showing the outflow from Rainy Lake, resulting from two methods or regulation on 100,000,000 and 150,000,000, cubic feet of total storage capacity. I believe it will not be necessary to go into that matter at the present time unless the commission so desire.

Mr. TAWNEY. It is not the purpose or intention of the commission to go into that phase of the matter at the present time.

Mr. MEYER. Then that is all I have to say.

Mr. TAWNEY. If any gentleman present wishes to ask a question, he can do so now.

Mr. SAMUELSON. I would like to ask if I understood you correctly to say that the height of the water under control was less than the height of the water would be under natural conditions.

Mr. MEYER. I do not believe that I made that statement; that is, over the same period of time. Our computations show, according to these curves, that for the last five years the highest point reached

under the condition of control was 497.3, whereas the highest point which would have been reached during the same period of years under natural conditions is something less than 493. But the highest point which would have been reached during the entire period of years from 1892 to 1913, covering the greater extremes of natural phenomena, particularly of rainfall, was something over 497.5 at the extreme water, which might have been expected during this period of years.

MR. SAMUELSON. That height might have been expected, but was not in fact actually reached?

MR. MEYER. We have, of course, no record of what the stage actually was. There are no observations of the levels during that period, but, as previously indicated, we believe our computation shows substantially what the levels would have been during that period of years. I might call attention once more to the fact, as clearly stated on the plate, that these records extend to December, 1913, for the reason that control commenced at Kettle Falls—that is, control of the inflow during 1914—so that it was not practicable; in fact, it was impossible to extend our computation beyond that date, not having the natural inflow into Rainy Lake after that date.

MR. MIGNAULT. I understand the inflow is now obstructed at Kettle Falls?

MR. MEYER. It is controlled at Kettle Falls.

MR. MIGNAULT. There is a control of the inflow into Rainy Lake at Kettle Falls. Am I correct?

MR. MEYER. Yes.

MR. MIGNAULT. And then there is further control at the outlet of Rainy Lake?

MR. MEYER. Yes.

MR. POWELL. You say that your computations show what the levels would have been, but you do not state whether it was so or not. Your calculations presumably are to show that the water would be actually at that height?

MR. MEYER. As previously stated, we believe our computations show substantially what was the fact with respect to the levels of the lake during that period of years.

MR. POWELL. With regard to the data, were you seized of all the factors which would enter into the somewhat complicated engineering problem necessary to deduce the levels at that time?

MR. MEYER. We have what we believed sufficient data to fully warrant those computations being made, although, as previously stated, we were more fortunate in the case of the Lake of the Woods in respect of available data. We had more data available at the time; but, nevertheless, we have sufficient data here to warrant us in making the computations and submitting them as being substantially correct.

MR. POWELL. Would your calculations be as authoritative as scientific calculations ordinarily are?

MR. MEYER. That phrase “ordinarily are” may perhaps be misinterpreted, but I would say one has to deal with many hydraulic problems and reach conclusions with much more incomplete data than the data upon which these calculations are based.

MR. POWELL. After having worked that out you are satisfied yourself that the conclusions you reached are approximately correct?

Mr. MEYER. Are substantially correct.

Mr. MIGNAULT. And I presume there are no other sources of information which the commission could consult other than those which you have yourself consulted?

Mr. MEYER. We have tried our best to get all available data.

Mr. POWELL. Did you get all the meteorological data from the regularly maintained Government institutions?

Mr. MEYER. All the available data from the Weather Bureau stations in the United States and the meteorological service stations in Canada, and made a very detailed study of the distribution of precipitation, and so on, so as to interpret this data properly. These data were properly weighted. If one station was in the central portion of the watershed it would be given different weight from a station on the border or just outside the watershed.

Mr. MIGNAULT. Just so as not to leave your language subject to undue qualifications, when you speak of every available data do you mean to refer to every existing data or were there some data which, though existing, were not available to you?

Mr. MEYER. All data of whose existence we learned we were able to secure.

Mr. POWELL. You were not denied access to any data?

Mr. MEYER. Not to my knowledge.

Mr. GLENN. Did you make any computations or estimations of anything prior to the building of the dam?

Mr. MEYER. This dam went into operation effectively in March, 1909.

Mr. GLENN. Which dam are you speaking of?

Mr. MEYER. This dam at the outlet of Rainy Lake, the dam that controls the outflow from the lake.

Mr. GLENN. The other dam was built earlier?

Mr. MEYER. Yes; it was built earlier, and this was built in the spring of 1909.

Mr. POWELL. Between 1873 and 1878 there was an elaborate survey made of the region, with a view of constructing the Fort Frances Lock. You consulted, I presume, the data that you could gather in the board of works department of Canada?

Mr. MEYER. The data referred to previously, the records of H. I. Mortimer and J. Hazelwood, were taken in 1874. We had their reports with reference to the construction of the canal.

Mr. POWELL. At that time you would have the natural situation?

Mr. MEYER. Yes.

Mr. POWELL. No artificial interference with it whatever?

Mr. MEYER. No obstruction in the way of a dam at the outlet. The conditions may not have been identical with those that prevailed 20 years later.

Mr. POWELL. But, as existing at the time, this would cover the height of Rainy Lake and the height of the river to the falls?

Mr. MEYER. The available data, so far as our studies are concerned, are somewhat limited, because the bench marks on which those elevations were calculated have not been found and have probably been lost or destroyed since that time; but we have records of the fall from the lake to the dam and the fall at Koochiching Falls.

Mr. POWELL. The bench marks are not available. Do you mean the datum from which it was worked out, or local datum?

Mr. MEYER. The local datum and that datum was lost.

Mr. KEEFER. Would you explain the difference between methods A and B, unless it is too long?

Mr. MEYER. I might state it briefly, although it was indicated we were not to go into that matter—

Mr. KEEFER. All right, leave it.

Mr. MEYER. Method A presumes to equalize the outflow over a long period of years; that is, to raise the extreme low-water flow as much as possible, whereas method B aims to utilize the greatest possible amount of water running from the watershed; that is, to equalize the ordinary low-water flow occurring each year.

Mr. TAWNEY. And the storage capacity is with reference to each method, is it not? In one case 100,000,000,000 cubic feet, and, in the other case, 150,000,000,000 cubic feet.

Mr. LAIRD. What effect did the works at the falls in 1870 have upon the outflow of the lake? I suppose they had some effect one way or the other?

Mr. MEYER. So far as our investigations indicate there was cribwork there, which, according to our information, did not substantially affect the outflow.

Mr. LAIRD. It would not affect the level at all, one way or the other?

Mr. MEYER. It would affect the level of the lake to a slight degree, because the increased outflow would permit the water to leave the lake more rapidly.

Mr. LAIRD. When you speak of Rainy Lake in a state of nature, were you speaking of it prior to the works in 1870 or since then?

Mr. MEYER. Since then, although those levels indicated substantially the same amount of fall to the rapids at the outlet of the lake, which should not be the case.

Mr. LAIRD. If the rate of outflow at the Falls here had been substantially increased, your judgment is that these works did not substantially affect the matter one way or the other?

Mr. MEYER. They do not.

Mr. KEEFER. Give us the data for the operation of the Kettle Falls Dam?

Mr. MEYER. As previously stated, the construction was completed early in 1914, and our graphs of observed water levels indicate that control of outflow; plate 99, for instance, giving the observed water levels on Rainy Lake for 1914, indicates the control of outflow.

Mr. KEEFER. Prior to 1914, would there be any obstruction in the flow to affect your data?

Mr. MEYER. There was not sufficient obstruction to in any way affect those computations.

Mr. WYVELL. For the information of the commission, would you give the high mark of the lake during 1914 and the low mark of the lake during that year, after the operation of the works at Kettle Falls began?

Mr. MEYER. Of what lake?

Mr. WYVELL. Of Rainy Lake, of the water in the dam, plate 92?

Mr. MEYER. The lowest point reached in 1914 was approximately 492.5 in April, and the highest point reached was approximately 497.5 in July. At the department of public works, Canada, lake gauge at the cribwork at the railway bridge, the records indicate

that at high stages that gauge registered levels which were somewhat too low, and when that fact was determined the gauge was moved further up in the lake. I would estimate that the true level of the lake further back was probably from two to three tenths feet higher than that given by the readings of the automatic gauge at the railway bridge.

Mr. WYVELL. Have you records for 1915?

Mr. MEYER. We do not publish any records whatever in our report for 1915, although they are, of course, available at the office.

Mr. POWELL. Is the effect of the creation of a reservoir above Kettle Falls Dam, and the equalization of the flow of water from that watershed, to lessen the maximum level of the Rainy Lake itself?

Mr. MEYER. Not necessarily. The level is entirely a matter of control at the outlet rather than inflow, although it would unquestionably reduce the rate of levels, resulting in more equalized levels.

Mr. POWELL. The general effect would be to lower the high level and to raise the low level?

Mr. MEYER. I do not see why it would raise the lower level; that is under control here.

Mr. WYVELL. The range of levels can be maintained at a more certain figure, the difference between high and low levels?

Mr. MEYER. I would not like to make a statement to that effect.

Mr. KEEFER. The answers you made to Commissioner Powell would equally apply to the Lake of the Woods, as regards the regulation of the water?

Mr. MEYER. Quite so.

Mr. SAMUELSON. You say that the dam at Kettle Falls was in operation in 1914. Do you know whether or not there was absolute control of the waters above Kettle Falls by that dam in 1914?

Mr. MEYER. We were there in 1914, and at that time there was absolute control of the outflow.

Mr. SAMUELSON. Was the dam in active operation so that they could control the waters back of the dam that otherwise would have flowed into Rainy Lake in its natural flow?

Mr. MEYER. Yes.

Mr. SAMUELSON. Was the dam absolutely completed in 1914, at the time you were there?

Mr. MEYER. I prefer to refer to the notes and photographs taken at that time. I do not like to make an off-hand statement, because I would like, first of all, to ask just what absolute completion would mean.

Mr. SAMUELSON. Well, that the work had been built so that it was completed in the manner in which it was intended to be completed.

Mr. MEYER. I do not like to trust to memory on a matter of that kind, particularly if a great deal of weight may be placed on the reply made to that question; but my impression was that the dam was substantially complete and the outflow under control. We took photographs at that time, and could, of course, refer to them.

Mr. TAWNEY. Have you a map showing the land—that is, a map independent of the one showing the contour lines—showing the lands as to ownership?

Mr. MEYER. We have secured a record of substantially all the State land around Rainy Lake that is involved in various storage studies on

the lake, but have not the privately owned land, except as it is indicated by the absence of State ownership.

Mr. TAWNEY. Have you that map here?

Mr. MEYER. We have those maps here. They are just in the preliminary form. The area is colored in blue. It is our intention to complete this work and present this information in a better and more thorough way, but the areas colored in blue represent State-owned lands, particularly around Black Bay and Rat Root River.

Mr. POWELL. Those had better go in evidence.

Mr. MEYER. It would be very much better to wait until the final copies are completed. These are just preliminary.

Mr. POWELL. Three maps are submitted to the commission by Mr. Meyer. These are marked, respectively, "M," "N," and "O," and they are in an incomplete condition at present, but when completed the completed maps are to be substituted for them respectively.

Mr. MEYER. This is just to give a general indication for the present purposes.

Mr. TAWNEY. Do I understand that these lands that are represented on this map colored blue would be submerged at the higher level of the water?

Mr. MEYER. These blue areas simply represent the land which is owned by the State, and the contour lines represent where the water would be if a certain stage were adopted. The areas which would be flooded at the various stages are still to be determined and will be determined.

Mr. TAWNEY. If there is anything else to be stated, we will hear it.

Mr. ROCKWOOD. I would like to ask Mr. Meyer one question. Does the height at which Rainy Lake may be established as a maximum have any bearing upon the amount of control in the outflow? That is, will the possible control and regulation of outflow in the direction of uniformity be greater with a higher stage in Rainy Lake?

Mr. MEYER. The lower limit of control is naturally determined by the physical conditions at the outlet, and assuming no enlargement of the outlet at the Falls, and Pithers Rapids in particular, for any given amount of equalization of inflow into Rainy Lake, the higher the stage in Rainy Lake the greater the storage capacity on the lake, and the greater the extent to which the outflow can be utilized.

Mr. ROCKWOOD. What is the reason that the water in the lake is higher than the water at the crest of the dam?

Mr. MEYER. A certain amount of fall is required to carry the water through the channel, particularly at Pithers Rapids, where the sections vary greatly in area and are subject to considerable eddying.

Mr. ROCKWOOD. In other words, the opening is so small that Pithers Rapids control the fall?

Mr. MEYER. It controls the fall required between the Falls and the dam for various kinds of discharge.

Mr. ROCKWOOD. State exactly where Pithers Point is.

Mr. MEYER. There is a map of Pithers Rapids in the report, plate 77, map of Pithers Rapids.

Mr. ROCKWOOD. That is the outlet of the lake proper, is it not, at the head of the river?

Mr. MEYER. I believe that is considered as the division between Rainy Lake and Rainy River.

Mr. SAMUELSON. If the dam was not located in its present place, and if the dam did not prevent the outflow of the water, then and in that case Pithers Point would not in any way control the waters of Rainy Lake, would it, unless the water was held and maintained at the dam?

Mr. MEYER. I would like to have that question read to me.

(Question read.)

Mr. MIGNAULT. It is a hard question to answer.

Mr. MEYER. Whenever the fall between the lake and the dam is less than the fall would have been under natural conditions the control is at the dam, and whenever the fall becomes greater the control is at the rapids.

Mr. SAMUELSON. So that, when you construct the dam in the place where it is now and the water is maintained in that dam, so that it does not have its natural outlet, then you must see that the dam is what controls the level of the lake and not Pithers Point?

Mr. MEYER. Yes; and control has, of course, been at the dam of recent years, because the fall has never reached the same amount as it did reach under natural conditions.

Mr. TAWNEY. Anyone who desires to present any testimony as to the value of the lands affected, either State or private lands, on either side of the line, can proceed with their testimony now.

STATEMENT OF CLIFFORD L. HILTON, ASSISTANT ATTORNEY GENERAL OF MINNESOTA.

Mr. HILTON. Prior to the time that the State was advised that at this hearing any testimony at all would be taken relative to Rainy Lake, Rainy River, and its tributaries, there was prepared a statement, signed by the State auditor and the auditor general, for the purpose of filing with this commission at this time, in which certain facts and conditions were recited and in which it was indicated that the State would be pleased, at some time to be indicated by the commission, to furnish any information that had been obtained, or could be obtained, relative to the situation existing on Rainy Lake, Rainy River, and its tributaries, on account of the maintenance of water at various levels by means of the dam that now exists at International Falls, or otherwise.

That statement is here, and with the permission of the commission I will file it, so that it can be made a record of these proceedings. On Tuesday, three days ago, it came to my attention that maps had been prepared relating to Rainy Lake, Rainy River, and its tributaries, which maps have been referred to in the statement made by the engineers this morning. As the commission is undoubtedly aware, and as this statement shows, certain litigation is pending between the State of Minnesota and the Minnesota & Ontario Power Co., in which it is sought to recover damages which are claimed to have been sustained by the State on account of lands that have been overflowed by means of the operation of this dam at International Falls, and a number of suits are pending, as I understand, between private parties and this same company. The State has made surveys and examinations of the lands that it claims have been flooded, submerged, and damaged by means of the operation of this dam, and if my recollection serves me right it is claimed that upward of 20,000 acres of

State-owned lands have been damaged by means of the operation of the dam, and a suit has been instituted and is now pending, issue having been joined, in which it is sought to recover \$200,000 for damages already sustained up to the time of the beginning of the suit. Now, the State is not prepared at this time, as it will probably be unnecessary to state, to furnish any testimony relative to the value of lands that may be submerged at the present time on account of the maintenance of the dam in question, of lands that might be submerged by the raising of the water to a higher level, as indicated on the maps which have been produced here to-day, and, of course, it is in no position at this time to furnish any testimony as to the value of land that may be affected by reason of the Kettle River Dam, the map not having been prepared and furnished by the engineers as yet. But if it be the desire of the commission to have the State at some future time furnish such testimony as it may be able to secure as to valuation of State lands affected, I think I speak advisedly when I say that the State will be only too glad to furnish all such testimony and evidence as is obtainable. I do not think it can be suggested even that the State should have been prepared at this time to furnish testimony relative to the valuation of these lands that are now affected, for the reason that the only information—at least that I had—of the hearing seemed to convey the impression—at least it did to me—that the only thing that was being considered was the levels of the Lake of the Woods. It is true, of course, that the condition of the maintenance of the water in Rainy Lake will affect the levels there, but the only maps that accompanied the notice that was called to my attention were maps of the Lake of the Woods; and, as I said before, not knowing there was anything else to be considered at this time, the statement I have referred to was prepared, in which the State offered in the future to prepare and present just what it would have been permitted to present had the information been in its possession at this time.

Mr. TAWNEY. You were advised, were you not, that the hearing would be held at International Falls for the same purpose for which the hearing was to be held at Warroad, namely, to ascertain the value of the land that would be affected by any change the commission might recommend in the levels of Rainy Lake, as well as in the levels of the Lake of the Woods. That notice was in the possession of the State officials more than two months ago, and you were also informed that the maps relative to the various levels on Rainy Lake were not completed, but would be completed and sent forward. The State of Minnesota has a complete record of the location of these lands, and it occurs to me that, with a little diligence, they could very easily have ascertained what lands were involved, and be able to give the commission evidence as to the land that would be affected and its value. This is an international matter, affecting the people of both countries, and both Governments, and the two Governments have placed upon the commission the responsibility and the duty of ascertaining and determining the value of the lands which will be affected at any of these levels, and if the State declines to give any evidence as to value, the commission will have to adopt some other plan of ascertaining, and our report will have to be made then to the two Governments, as we are required to do under the reference, without the State having given any testimony at all.

Mr. HILTON. The State does not decline, in fact, has offered to furnish that testimony later on, if it be——

Mr. TAWNEY. That means that the commission would have to come back again to International Falls, because the people who are interested here will have to have an opportunity of appearing, and it is the purpose of the commission to adapt itself to the convenience of the people on both sides of the line in the matter of holding these hearings. I do not know what the commission will think about it.

Mr. GLENN. I heard at Warroad—and I could not tell who gave me the information—that the State would not produce any testimony at this hearing, for the reason that this suit was pending, and that the State would not submit any testimony while the suit was pending, but would want the suit to be heard first, and then would offer such testimony as they saw fit, and that they would present a written statement declining to give evidence. Is that true or not?

Mr. HILTON. No; it is not true. The statement does not say anything of that kind. It recites the fact that the suit is pending, and that the questions of law which are involved are now in process of being determined by the supreme court. The same question and many questions are involved in that. Personally, I disclaim that any blame should be attached to the State for not having testimony here to-day. The only notice I know anything about is the notice of July 6, 1915, in which reference is made specifically to certain maps which are inclosed, and the only inclosures are maps of the Lake of the Woods, and it says:

For the information of those interested, maps are inclosed showing the results of the surveys carried on by the direction of the commission.

As I said before, the inference that was drawn by our office was that all that was to be heard at the hearing was in regard to the lands that might be overflowed or damaged, bordering on the Lake of the Woods and we have no lands bordering on the Lake of the Woods.

Mr. TAWNEY. The auditor's office was notified subsequently to that notice in regard to the maps, with a reference showing the lands on Rainy Lake. I do not know whether the secretary has the correspondence here.

Mr. WYVELL. May I ask what is the character of the land owned by the State of Minnesota? Are they lands that are under cultivation, or wooded lands, or what?

Mr. HILTON. Personally, I could not answer that question, because I have never had occasion to examine. I may state, in answer to the question, that the lands are not cultivated, but they are timber lands, meadow lands, and all kinds of lands, such as the engineers in their reports show that they found on their examination.

Mr. TAWNEY. Have you the correspondence, Mr. Kluttz, with the auditor's office of the State of Minnesota, with respect to the maps of the Rainy Lake and the hearing here?

Mr. KLUTTZ. No. I sent the auditor the formal notice and the maps, and he acknowledged receipt of them.

Mr. TAWNEY. The correspondence with reference to the maps of Rainy Lake?

Mr. KLUTTZ. The maps were not out.

Mr. TAWNEY. But you informed him that as soon as they were out they would be sent?

Mr. KLUTTZ. Yes; but they were not out when I left Washington.

Mr. TAWNEY. I was asking if you had the correspondence with the State auditor's office. You had a complete list of the parties to whom notices were sent?

Mr. KLUTTZ. Yes. I have it here. I sent notices to the State and all the parties interested.

Mr. ROCKWOOD. I would be glad if the attorney general would state how the State gets its title to these lands, and whether they are school lands, or swamp lands, or what they are? I refer to all the lands that the State owns which it is claimed might possibly be affected.

Mr. HILTON. I could not tell you; I have not that information at hand. It will be a matter of record.

Mr. MAGRATH. You were present at the hearing at Warroad, part of the time?

Mr. HILTON. On Tuesday.

Mr. MAGRATH. Were you present when a similar request was made by the parties there for a delay in the hearing?

Mr. HILTON. I was not.

Mr. MAGRATH. It was made by some of the interests, and personally, I very strongly object to any further time being given, because I do not think it would be fair to the agricultural interests, who were represented there, and who presented their case. However, I appreciate the fact that when the State of Minnesota comes forward and asks for certain privileges, they should be very carefully considered. My own judgment is that we should proceed with the hearing, take the matter under advisement, and consider it later.

Mr. TAWNEY. They simply say they have not any testimony to offer. Are any of the private owners of land in Rainy Lake prepared to proceed?

STATEMENT OF JOHN E. SAMUELSON, OF DULUTH, MINN.

Mr. SAMUELSON. Mr. Chairman, I received a notice, I believe, that was one of the circular notices, and a number of my clients received a similar notice; but there was nothing in that notice which indicated to me that there was any necessity for appearing here to produce testimony to show the value of these various lands. At that time I knew nothing about the maps and plats of the various stages of water that were intended to be taken into consideration on Rainy Lake and tributaries, and in fact I had no knowledge of the fact that these maps and plats had been gotten out until this morning. The lands of these settlers are of various values. We do not know at what level it is intended to raise Rainy Lake; not only that, but the level of Rainy Lake at the present time is maintained by a corporation which claims that it has a right at the present time from Congress to maintain the lake not only at that level but at any level that it may see fit under the dam that it has in here. That is the matter that they presented to the court here in the trial of one of these actions. They claim that they have the right from the Government to put in this dam, that they have the right to maintain the dam at a certain level, and that the plans have been approved by the War Department, because of which fact they have maintained their dam here. They have damaged the lands of 35 persons whom I represent situated along the Rainy Lake and the tributaries of Rainy

Lake on the American side. Their damages for the overflowing up to the time of the commencement of those lawsuits aggregated \$90,000.

Mr. POWELL. How many acres were overflowed?

Mr. SAMUELSON. Approximately 1,500 acres.

Mr. TAWNEY. \$90,000 is the amount claimed, is it?

Mr. SAMUELSON. Yes, sir; that is the amount claimed, based upon the damage that had been done up to the time that the water was raised to such a height.

Mr. TAWNEY. Are the following-named persons your clients: James Brennan, Josephine Brennan, Emma A. Coxon, Algot Erickson, Carl J. Erickson, Frederick Heinemann, Martin Mathison, L. A. Ogaard, Bert T. Pease, George Watson, Thomas Watson, Freddie Kelley, John Skoglund, selectmen, village of Ranier, R. H. Bennett?

Mr. SAMUELSON. Yes, sir.

Mr. TAWNEY. All whose names I have read and whom you say you represent were notified more than two months ago of this hearing. In addition to the personal notice sent to them notice was published in the International Falls Echo and the Journal of International Falls; also the Duluth News-Tribune and the Pioneer, of Warroad, in addition to the publications in the metropolitan press of the State. The people were advised that as soon as the maps were ready they would be sent. The people were also advised of the time and place of the hearing and the character of the evidence that would be expected of them, namely, that the value of overflowed land had to be ascertained by the commission. It looks as though you paid no attention to the notice whatever, or to the purpose of the hearing, simply because you did not consider the commission had any power in the premises, and therefore concluded it was not necessary to advise your clients to appear.

Mr. SAMUELSON. Mr. Chairman, I do not like to have you impute that I did not believe that this commission had not any function to perform or that my attitude has been one of disobedience to the order of the commission. I do not like to rest under that imputation. The only trouble was this, under the notice that I received, which was a public notice that I believe was sent out to everyone, I was not informed by that that this commission was to render to these settlers any justice or any compensation, nor did I believe that this commission was here for the purpose—

Mr. TAWNEY. You are a lawyer, are you not?

Mr. SAMUELSON. I am supposed to be.

Mr. TAWNEY. That notice contained the three questions which the two Governments have submitted to this commission for report and recommendation. One of those questions was to ascertain and report the value of the land that would be submerged at the levels which we report. Presumably the two Governments want this information with a view to a final settlement of this matter. This is an international dispute, and in the final settlement somebody must pay for the land that is submerged by reason of the level recommended or adopted by the two Governments to insure the most advantageous use of these boundary waters. Any lawyer or layman reading that notice would know that that was the duty of the commission and that that was the purpose of these hearings.

Mr. SAMUELSON. These men are all men who live out in the woods.

Mr. TAWNEY. I do not care where they live; they have had personal notice, and you as their representative were notified.

Mr. SAMUELSON. I have, on behalf of these settlers who have had their lands taken from them by the people who have dammed up this river here, brought my action against the people I believed were responsible. I could not understand from the letter that was sent out by the commission that they intended to take over the burden which we had attempted to place upon the party where it was actually due. If I had thought for one moment that the Government intended to take that burden from this corporation and place it upon the Government, I should certainly have been here with testimony to show the damage that had actually been suffered by these settlers.

Mr. POWELL. We have nothing to do with those matters. They are entirely collateral.

Mr. TAWNEY. The people at Warroad had the same notice. They are farmers. Some of them live in the woods, as you say your clients do, but most of them are living in the open. They were present to submit their testimony and were there for three days.

Mr. GLENN. With one difference—they had their maps, and these people had not.

Mr. TAWNEY. So far as the maps are concerned, the parties would have been there if there had been no maps. So far as we were able to get the maps for the accommodation of the people we furnished them, and where we could not get them we could not furnish them. But the people of Warroad understood the notice. They appeared in person and by counsel, and were heard as to the value of their land, and there is no excuse for anyone who claims that his land is overflowed by the high level of the lake not being here prepared to give evidence of that fact.

Mr. GLENN. I think you are mistaken there. We agreed that we would send these maps out for the purpose of notifying them as to what would be done.

Mr. TAWNEY. I am talking about the question as a matter of right.

Mr. MAGRATH. What is it you want, Mr. Samuelson?

Mr. SAMUELSON. I have prepared a petition similar to the petition prepared by the State. If it is the desire of the commission that we furnish proof of values as to the actual damage that may be suffered by these various settlers up to these various levels—that is, all the way from the natural level that the waters were maintained at originally and these various levels up to the 501 bench mark, as has been prepared by the engineers—then we are absolutely willing to do it at any time and meet with the commission and present such values to the commission, but until we know just exactly what levels or just what the commission wants in this respect we would be unable to furnish any data of that kind.

Mr. MIGNAULT. What is exactly the prayer which you present to the commission? Do you ask for delay, or is your position this—that until we determine the precise level which will be established you are not ready to go on?

Mr. SAMUELSON. That is just exactly what I ask your honor.

Mr. MIGNAULT. You will concede that before the commission determines upon any precise level it must know the effect of such level so

far as compensation, for instance, is concerned. If we fix a certain level, we must be in a position to say that the fixing of such a level will overflow such a quantity of land, and that the lands so overflowed will be worth such a sum; but we can not logically fix a level and then determine what would be the value of the land overflowed. When we make our report to the two Governments we must be in a position to say: We recommend such a level, and at such a level so much land will be overflowed, and the value of that land is so much. We have to come here and we have to ascertain, before we fix any level, what is the value of the land involved by the fixing of a level.

Mr. SAMUELSON. The water, we will say, to-day is maintained at 496. These people living 10, 12, or 15 miles from here know where the water is at 496. Until a survey is made and until we have a plat from which we can ascertain what land will be included in such other level as may be proposed we are unable to say just what the value of the land is that will be taken.

Mr. MIGNAULT. But take a maximum level. You can certainly give us the value of your lands, say, up to 497, up to 498, or up to 499, or any figure. The commission must have full information as to the value of the land, because the fixing of the level at say 499 would involve a large amount of compensation, and fixing the level at 2 feet lower, involving a lesser amount of compensation, would be more desirable. These are questions on which the commission must be fully informed before it can determine any precise level. Therefore, your clients should be able to say that at such a level so much of their lands will be covered, and the maps which are here now show that at such a contour, for instance 497, such and such lands are involved. You can value the whole farms, and your clients or you can say up to such a level the lands are worth so much an acre. Then with that information the commission can determine what would be the cost of maintaining these storage basins.

Mr. SAMUELSON. We had, of course, no knowledge as to what levels the commission were figuring on, nor up to what point they were determined to go.

Mr. MIGNAULT. The commission has not determined that yet.

Mr. TAWNEY. The plats are here now, and if your clients were here we could proceed to ascertain the value of the land that would be involved in the levels between the maximum level and the lower level.

Mr. MAGRATH. The situation is different here from what it was in the case of the Lake of the Woods, because you have a structure here which has been in operation for some years and which has been holding the water up to a certain elevation. The people must know to what extent that dam has had an influence upon their lands.

Mr. SAMUELSON. I will take all the blame that is my due in that respect—that is, that it was my idea that as this damage that has been done to my clients up to the present time has been done by a private concern, and as my belief was that that private concern was the one that should be chargeable with that damage, I did not believe that the commission desired to have any information with reference to that.

Mr. TAWNEY. Mr. Samuelson, these waters, as you know, are international waters. Their obstruction has been by the authority of the two Governments. You also knew that the whole subject of this international controversy, which has been going on here for 20 years,

has been referred to this commission for investigation, with a view to its final determination. You also knew that these hearings were to be held here for the purpose of ascertaining certain facts affecting navigation, agricultural, and harbor interests along these waters, and, although you represent people whose land you claim is submerged, you are not prepared, and have even advised your clients not to appear and assist the commission in ascertaining the values of their lands. It looks to me as though your attitude is that of absolute indifference as to the purpose of the hearing and as to the function of the commission in respect to this investigation.

Mr. GLENN. Mr. Chairman, here are the assistant attorney general and the auditor of the State of Minnesota, as well as attorneys representing clients, who say to us that they mean no disrespect to this commission, and give reasons why they did not do thus and so, asking us for time in which to do it. We have to come back to Winnipeg to investigate matters in connection with the power interests, and, rather than have any person say he did not have a fair hearing, I should think it would be but right to sit another day at this place and let these interests be heard, and then go on to Winnipeg and hear the power interests.

Mr. TAWNEY. They want no hearing until after litigation is out of the way.

Mr. GLENN. I asked him that and he said he did not.

Mr. MIGNAULT. Mr. Samuelson takes this position, that until we have determined a precise level they do not want to go into this question of values at all. If I understood you, Mr. Samuelson, that is the position you take?

Mr. SAMUELSON. No; I do not wish to be understood that way. I did not know that you were trying to fix any levels on Rainy Lake. From the notice I took it that you were trying to fix a level at the Lake of the Woods. Now, my clients have not anything to do with the Lake of the Woods.

Mr. TAWNEY. The water of Rainy Lake is affected by that, though.

Mr. SAMUELSON. The water that is run out of Rainy Lake is controlled entirely by this dam, and I did not know that the Government intended to take charge of the waters that flow out of this dam here. It has been a misunderstanding on my part, and I have fallen into exactly the same error that the State of Minnesota has fallen into.

Mr. POWELL (reading):

In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from that lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, is it practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and if so, at what level?

You thought that was the only level we were establishing?

Mr. SAMUELSON. I thought the only level you were establishing was that of the Lake of the Woods.

Mr. POWELL. Then what are you here for to-day?

Mr. SAMUELSON. I just wanted to see that none of the rights of my clients were invaded.

Mr. POWELL. If we were not going to touch Rainy Lake at all, how would that affect the rights of your clients?

Mr. SAMUELSON. I did not know until this morning when I saw these maps and plats here to the effect that the engineers had established certain contour lines all the way from 497 up to 501, as compared with the Canadian bench mark.

Mr. POWELL. There is certainly a lack of definiteness, if not an absence of description, in the notice.

Mr. SAMUELSON. I read that notice with care, and I could not take from that notice the fact that the commission intended to possibly raise the waters of Rainy Lake here up to any definite level.

Mr. TAWNEY. Gentlemen, we will now take a recess until 2 o'clock.

Mr. KEEFER. There may be some other parties here who represent other interests that would like to be heard.

Mr. TAWNEY. Then we will hear them at 2 o'clock.

(The commission thereupon, at 12.30 o'clock p. m., took a recess until 2 o'clock.)

AFTER RECESS.

INTERNATIONAL FALLS, MINN., *September 10, 1915.*

The commission reassembled at the expiration of the recess, all the members being present, Mr. Tawney presiding.

Mr. TAWNEY. Since the recess taken by the commission the question of proceeding further with this hearing in respect to the value of the lands that are involved on both sides of the line has been considered by the commission. We have also considered the representations made by the State of Minnesota with respect to not being prepared at this time to proceed with evidence as to the value of the State lands that are involved and the statements made by the legal representatives of certain private owners of land. The commission has concluded to proceed with this hearing as far as there are interests here represented that desire to be heard, and that as to the value of the lands it will have to adopt some other plan of obtaining information with respect to these values. If in carrying out this plan it is deemed necessary or advisable to take testimony on behalf of the State and on behalf of private interests with reference to the value of the State or private lands that may be involved on our side of the line or on the Canadian side of the line, the State and private interests or their representatives will be notified of the time and place of the hearing. For the present we will go on with the hearing, so far as the navigation and other interests are concerned, including the municipalities on both sides of the river. I do not know whether the fishing interests want to be heard here or not. Any interest that is affected, whether specified in the notice or not, will be heard.

Since the organization of this commission it has endeavored to accommodate the people who are directly concerned in all matters before it, especially as to the place and time of hearings, and we supposed when we gave the people in this vicinity two months' notice of the hearings here to-day that they would take interest enough in the subject matter of the hearings to be present. But inasmuch as they are not here, except by counsel who are not prepared to proceed at this time, the commission will have to adopt some

other plan of obtaining the information necessary to intelligently determine the land values that are involved in the levels on this lake and its tributary waters. If in the carrying out of that plan the commission thinks it advisable or necessary to hear the owners, both State and individual, they will be notified.

Mr. ANDERSON. That, of course, applies to both sides of the line.

Mr. TAWNEY. That applies to both sides of the line.

Mr. ANDERSON. As you know, there are a number of individuals affected, and the Canadians have not taken the trouble to present their case. If you are going to proceed as you state, I assume all interests will be dealt with in the same way.

Mr. TAWNEY. If in carrying out any plan the commission may hereafter adopt for ascertaining the value of lands it is decided to conduct public hearings all interests, of course, will be notified and be given an opportunity to be heard.

Mr. KEEFER. On behalf of the Province of Ontario, I might say that whomever you appoint, any of our officials will be very glad to give you any assistance. All we desire to do is to assist you in any way we can, and I have no doubt that is the same position the State of Minnesota takes.

Mr. HILTON. I wish to say, Mr. Chairman, that, as just announced by you, it would be generally satisfactory to the State, and we will hold ourselves in readiness to be of any assistance we can. In that connection, with the privilege of the commission, I would like to have filed and have made a part of the record a letter of July 6, 1915, referring to this hearing, in order that there may be no question as to any laches.

Mr. TAWNEY. That is a communication you received from the secretary of the United States section of the commission?

Mr. HILTON. I understand so. It was received by the State auditor and turned over to our office. It is for the purpose of clearing the record.

Mr. SAMUELSON. That is an additional copy of the letter that I received, and I wish to state that there was no intention on my part to not help carry out the wishes of the commission, but I did not understand that letter in the way that the commission evidently intended that it should be understood.

Mr. TAWNEY. Any opinion I expressed with respect to it is my individual opinion, and not that of the commission; but it looks very much to me as though there was no intention on the part of the legal representatives of the private owners of land to present any evidence at all at this hearing. But that is neither here nor there; the commission has concluded to take the matter up, as it has the right to do, in any manner it may see fit, and if in the carrying out of the plan for the purpose of obtaining the information that we must obtain in order to intelligently respond to the questions which the two Governments have submitted to us it becomes necessary to call upon the State or upon you or your clients, we will do so. I may add that I hope it will not be necessary to invoke the power which the commission has under the treaty of January 11, 1909, to compel the attendance of people before it for the purpose of testifying, whether they are willing or unwilling.

STATEMENT OF J. A. O. PREUS, AUDITOR FOR THE STATE OF MINNESOTA.

Mr. PREUS. I merely want to make this request, if you please. The lands of the State affected are somewhere in the neighborhood of 18,000 to 20,000 acres. If a value is to be placed upon them by the State, I prefer to do it in the regular manner, by the appraisers that are appointed by me as State auditor, and I should like to have ample time to do that in conformity with law. The funds of the State auditor are such that I would have to use every possible care in ministering them to make an appraisal for this large section of land here. So if I can get an early notice of the next hearing it will be greatly appreciated.

Mr. TAWNEY. How much time, Mr. Preus, would be necessary to estimate the value of the lands along the shore of Rainy Lake and tributary waters—the State lands that are affected?

Mr. PREUS. I should say we would need about 90 days, probably.

Mr. TAWNEY. Is there any interest, navigation or other interest, that is here for the purpose of being heard and desires to be heard at this time?

Mr. KEEFER. Mr. Chairman, I asked Mr. Meyer if he had the contour levels out of Fort Frances. He said he got the best data that he could obtain. I happened to meet the town engineer and I asked him to bring over a plan. I will ask him to come forward and give what evidence he can about the levels at Fort Frances. It may be of use to the consulting engineers.

TESTIMONY OF P. A. WRIGHT, OF FORT FRANCES, ONTARIO.

(P. A. Wright, being first duly sworn, testified as follows:)

Mr. KEEFER. What is your official position in connection with Fort Frances?

Mr. WRIGHT. Town engineer.

Mr. KEEFER. Have you any tabulated data respecting the levels of the town as compared with the water levels?

Mr. WRIGHT. Yes, sir; I have maps that I have just completed of the sewers. These maps show the street levels on the different streets.

Mr. KEEFER. Will you kindly furnish those to the commission for its information and for the information of the consulting engineers? Can you leave those on file with the commission?

Mr. WRIGHT. I would prefer not to, because we are using them.

Mr. KEEFER. Will you undertake, then, to file with the secretaries copies of those maps?

Mr. WRIGHT. I could do that. It would take a little while to make them, because I have not the tracings. I would have to make new plans. There are several plans here.

Mr. TAWNEY. Can you state, without the use of the map, what the relative level of the city of Fort Frances is, compared with the level of Rainy Lake?

Mr. WRIGHT. The bank is approximately 500 and runs back to about 508.

Mr. TAWNEY. How far back from the shore of the lake is it 8 feet higher?

Mr. WRIGHT. That means on the river. The town proper is just along the river bank.

Mr. TAWNEY. What is the relative height of the town compared to the level of the river?

Mr. WRIGHT. Five hundred at the river, approximately all the way—500 to 501. Then, going back about a quarter of a mile, it is about 508.

Mr. TAWNEY. That is the level of the city?

Mr. WRIGHT. The level of the streets; yes, sir.

Mr. TAWNEY. What is the level of the river?

Mr. WRIGHT. The level of the river now is about 496.

Mr. POWELL. That is above the falls?

Mr. WRIGHT. Yes, sir.

Mr. POWELL. What is it below the falls?

Mr. WRIGHT. The town is still up at about 508. Of course, the river is much lower than that.

Mr. POWELL. For purposes of sewerage—

Mr. WRIGHT. We drain below the town.

Mr. GLENN. Below the dam?

Mr. WRIGHT. Yes, sir.

Mr. TAWNEY. You do not treat your sewage, do you?

Mr. WRIGHT. No, sir.

Mr. TAWNEY. How many people are there in Fort Frances?

Mr. WRIGHT. We estimate that there are from 3,000 to 3,500.

Mr. TAWNEY. All that sewage goes into the river below?

Mr. WRIGHT. Yes, sir.

Mr. TAWNEY. Have you ever heard of any complaints from the people on either side about the fish life being destroyed in the Rainy River on account of its pollution?

Mr. WRIGHT. Yes; I have heard certain people objecting to the fish life being destroyed. The general opinion seems to be that it was caused by the overflow of what is turned out by the paper mills.

Mr. KEEFER. What do you mean by that?

Mr. WRIGHT. I do not know what it is. There is a certain refuse—a white substance.

Mr. POWELL. The pulp is boiled in acid.

Mr. KEEFER. Is that discharged into the river?

Mr. WRIGHT. Yes. You can notice in the canal that it looks quite white.

Mr. POWELL. It is a sulphite mill, is it not?

Mr. WRIGHT. I believe it is.

Mr. POWELL. They cook in boilers the sulphite material, and the gas which is discharged into the river destroys the fish. Is that the contention.

Mr. WRIGHT. I have not heard what the contention is.

Mr. TAWNEY. The city of International Falls also discharges its raw sewage, untreated, into the river, does it not?

Mr. WRIGHT. Yes.

Mr. TAWNEY. Below the falls?

Mr. WRIGHT. Yes, sir.

Mr. KEEFER. As representing the Province of Ontario, it is my duty, Mr. Wright, to bring before the commission anything affecting your town. I have heard that your park—that has been recently donated to you and which is called Pithers Point—is somewhat

affected by these levels. Describe Pithers Point and state how it is affected.

Mr. WRIGHT. The park proper there is a long point at the rapids where the Rainy River starts from the lake. There was quite a grove there of hardwood trees—mostly elm, oak, and ash. That was the only grove on the lake near town. Last year the water raised so high it ruined the grove. Although it was not all under water, the greater portion of it was so soft as to make it objectionable.

Mr. TAWNEY. What was the level of the water at the time it was overflowed?

Mr. WRIGHT. I believe it was 497.5.

Mr. TAWNEY. Was that the reading on the gauge or was it the level up there?

Mr. WRIGHT. It was running over the dam here. I was not the town engineer last year, but this is my home and I keep in touch with it. I have a map here showing the erosion of the bank and the flooded part of the point, if you wish it. It was made by the engineer who was here last year.

Mr. KEEFER. Any data like that the commission would like to have. It desires to get all information possible. By whom was this plan made that you are now referring to?

Mr. WRIGHT. C. E. Perry, the town engineer last year.

Mr. KEEFER. Can you likewise furnish a copy of that?

Mr. WRIGHT. I can leave this copy.

(The plan above referred to, which shows the river front at International Falls and the erosion of the bank on the Fort Frances side, was received and marked "Exhibit P.")

Mr. TAWNEY. Please indicate on this map the lines that show loss by erosion.

Mr. WRIGHT. The outside black line next the river is the original river bank. The inner black line is the present river bank, that is until last year, June, 1914. It is practically the same now. The difference between those two is, of course, the erosion.

Mr. TAWNEY. The figures between these two lines indicate the extent of erosion by feet?

Mr. WRIGHT. Yes, sir; at that point.

Mr. TAWNEY. Where it says "36 feet," that means 36 feet of the bank have been washed away?

Mr. WRIGHT. Yes, sir.

Mr. TAWNEY. Where it says "48 feet," that means 48 feet of the bank have been washed away?

Mr. WRIGHT. Yes, sir.

Mr. MAGRATH. How did you get the original line?

Mr. WRIGHT. That was taken from original maps, the distance being plotted so far from the different street corners.

Mr. MIGNAULT. When was that plan prepared?

Mr. WRIGHT. In June, 1914.

Mr. MIGNAULT. Since when has this erosion been going on?

Mr. WRIGHT. I do not know when the plan was made that this one was first copied from.

Mr. MIGNAULT. You say you do not know when this plan was made?

Mr. WRIGHT. This plan is dated at the end—1914.

Mr. TAWNEY. Can you tell us when the surveys were made showing the corners from which the original shore line was estimated for the purpose of this map?

Mr. WRIGHT. I do not know. It has been some map of the town, but I do not know which one he took it from.

Mr. TAWNEY. You do not know whether it was 15 or 20 years ago?

Mr. WRIGHT. I do not.

Mr. TAWNEY. Have you any idea as to the time?

Mr. WRIGHT. I have not.

Mr. TAWNEY. That would give us some idea of the time in which this erosion has taken place.

Mr. WRIGHT. The town map that he has, from which I would judge he took this plan, was, I believe, made in 1906 by Mr. Gillam.

Mr. MAGRATH. When was the town site surveyed?

Mr. WRIGHT. I do not know that.

Mr. GARDNER. What is the cause of this erosion?

Mr. WRIGHT. I guess there are many causes—high water and the wash from the boats.

Mr. KEEFER. There is some arrangement there for protection, I believe?

Mr. WRIGHT. There has been a great deal of discussion about putting protection up the river.

Mr. KEEFER. How long have you been living in the town?

Mr. WRIGHT. Fifteen years.

Mr. KEEFER. Have you noticed whether or not that erosion has taken place recently?

Mr. WRIGHT. It has been going on faster in recent years. I would say that nearly all that erosion has happened in the last eight years.

Mr. KEEFER. Why do you fix it as eight years?

Mr. WRIGHT. Well, I want to give it room enough. I am more familiar with Pithers Point because I lived there.

Mr. KEEFER. Just confining it to this point, are you familiar with the state of affairs prior to the construction of improvements here in the river in the way of the dam? Do you remember the river when there was a natural fall there?

Mr. WRIGHT. Yes.

Mr. KEEFER. Do you remember the state of erosion then?

Mr. WRIGHT. Yes; there was very little erosion then. The water was lower then. Of course, another thing that has been brought up since is the swell of the boats.

Mr. KEEFER. You did not have the motor boats and the launches?

Mr. WRIGHT. No; but the water was always lower.

Mr. KEEFER. Is there any difference in the erosion on the sides of the river banks?

Mr. WRIGHT. I know only about this side of the bank.

Mr. KEEFER. You said you were also familiar with Pithers Point. Give the commission what information you can about that.

Mr. WRIGHT. This plan shows Pithers Point. It is approximately 2 miles from here. This Pithers Point is the town park. From the line drawn in pencil south is the grove of trees.

(The plan referred to by Mr. Wright, which shows the erosion of the river bank at Pithers Point, was marked "Exhibit Q.")

Mr. KEEFER. What type of trees are there in that grove?

Mr. WRIGHT. Hardwood trees, elm, oak, and ash.

Mr. MAGRATH. And being the extreme end of the point to a depth of how many feet?

Mr. WRIGHT. Between 600 and 800 feet. That is what is considered the better part of the town park, on account of the grove. The part that has been flooded is represented by the dark-blue colored line.

Mr. KEEFER. The other deep heavy blue line across the plan is the railway?

Mr. WRIGHT. Yes. The southerly part of the point, marked as marsh, is now too wet to be of any use as a park. There is only a small portion near the railroad that is dry enough to be suitable.

Mr. KEEFER. What was it used for before it became of that nature?

Mr. WRIGHT. That was the Indian agent's residence.

Mr. KEEFER. Who was he?

Mr. WRIGHT. He was my father.

Mr. KEEFER. Is he here?

Mr. WRIGHT. Yes. This erosion on Pithers Point is very great. I am rather familiar with that, because we lived on that point for six years, and I know from landmarks on it how much the bank has been washed. It is nearly 80 feet, continuing up the shore for over a mile to the Indian village. There has been some protection work constructed at the Indian village.

Mr. KEEFER. Speaking of construction work, if that is to be preserved should there be some construction work immediately?

Mr. WRIGHT. Yes; that is going out at least 10 feet a year. The soil is a sandy loam and washes with the waves from the lake.

Mr. TAWNEY. How far is it up from the dam?

Mr. WRIGHT. About $2\frac{1}{2}$ miles.

Mr. KEEFER. That is by the river?

Mr. WRIGHT. Yes.

Mr. KEEFER. How far from the settled part of your town is it?

Mr. WRIGHT. Part of our town is about halfway.

Mr. KEEFER. Your other map shows, by contour lines, the streets, etc., as to levels?

Mr. WRIGHT. It shows profiles of the streets.

Mr. KEEFER. From that data Mr. Meyer and Mr. White can accurately plot everything desired.

Mr. WRIGHT. Yes.

Mr. MAGRATH. Are there no steps being taken to protect that point?

Mr. WRIGHT. None at all. The only protection is at the Indian village.

Mr. MAGRATH. To what do you attribute the erosion along the river in front of the town?

Mr. WRIGHT. High water and the boats—a combination of both, I would say. No doubt it would have washed if the water had been lower, but it is a question if it would have washed as fast.

Mr. TAWNEY. How wide is the river along this front that has been washing away gradually as the result of the erosion?

Mr. WRIGHT. About 800 or 1,000 feet. That is only an estimate, however.

Mr. TAWNEY. What is the wind effect on that water; that is, from the south or west?

Mr. WRIGHT. The wind effect is very slight. There is not much wave action there.

Mr. TAWNEY. Then how does the elevation of the water occasion this erosion?

Mr. WRIGHT. The water being held at the top of the bank, the swells from the boats keep washing the top off the bank.

Mr. MIGNAULT. Is the steamboat channel near the shore?

Mr. WRIGHT. It is all deep enough. They generally go up the middle of the river. Of course, there are booms now out in the river that divert the channel.

Mr. KEEFER. Where are those booms?

Mr. WRIGHT. There is one on each side. There is one on the Canadian side coming from Pithers Point downstream to approximately 600 or 700 feet below the Shevlin-Clarke mill. The one on the American side is from near Jamesons Creek to practically the head of the falls.

Mr. KEEFER. What distance is that creek from the head of the falls?

Mr. WRIGHT. Nearly a mile.

Mr. KEEFER. How far out are those booms in the channel?

Mr. WRIGHT. The one on the American side is out to about 300 or 400 feet.

Mr. KEEFER. How far out in the channel is the one on the Canadian side?

Mr. WRIGHT. They are not parallel. The Canadian boom does not come down as far. The channel is toward the Canadian side.

Mr. KEEFER. But how far are the Canadian booms out in the channel?

Mr. WRIGHT. They go out there about the same distance.

Mr. KEEFER. Do either of those booms affect the washing?

Mr. WRIGHT. Not unless they might swing the booms nearer the bank.

Mr. KEEFER. In what way?

Mr. WRIGHT. The boats leaving here might be nearer the Canadian bank than originally by virtue of the boom.

Mr. KEEFER. Then above that—

Mr. WRIGHT. They would go back into the middle of the river again.

Mr. KEEFER. Possibly those booms, then, play a part in the washing that is taking place.

Mr. WRIGHT. I do not think so. It would be only a matter of a couple of hundred feet at the most.

Mr. MAGRATH. Do you notice the same amount of erosion now since the boom that protects the Canadian shore has been in?

Mr. WRIGHT. The boats leaving here might be nearer the Canadian side is above the main streets of the town.

Mr. MAGRATH. Would you not think that the boom would protect the shore?

Mr. WRIGHT. I should think it would protect it to a certain extent as it would break the force of these swells.

Mr. KEEFER. Is there anything else in behalf of your town that you wish the commission to know about? You know the object of the commission's visit here. Does the town object to any increase in the level of the river?

Mr. WRIGHT. Yes; very seriously, as it would flood some of our streets. If the water were increased at all, they would have to protect the bank to a considerable length. Although our street is not flooded, it makes it very soft in several places.

Mr. KEEFER. If the commission would like to visit that part of the district, you would be glad to go at any time?

Mr. WRIGHT. I certainly would.

Mr. MAGRATH. Did you say the low level of your street was 500?

Mr. WRIGHT. Yes; some parts of our street are lower than that.

Mr. ROCKWOOD. Mr. Wright, when was the park granted to the town?

Mr. WRIGHT. I can not tell you that definitely. I am not sure of the date.

Mr. ROCKWOOD. Do you know when the contract was made between the company and the Government for the construction of the dam?

Mr. WRIGHT. No.

Mr. ROCKWOOD. Assuming that that was in 1905, Pithers Point was Government property at that time, was it not?

Mr. WRIGHT. Yes; it was at that time.

Mr. ROCKWOOD. It was granted some time later to the town?

Mr. WRIGHT. I do not remember, but I think it was about 1906.

Mr. ROCKWOOD. The plans for the dam were approved by the Government, were they not? They were approved by the Dominion Government and by the Ontario government?

Mr. WRIGHT. I presume they would have to be.

Mr. ROCKWOOD. Did you know that there was some prosecution—an attempt to prosecute and convict someone with respect to this injury to the street?

Mr. WRIGHT. Someone, or some company?

Mr. ROCKWOOD. I do not know which. Do you know? There was an acquittal, was there not?

Mr. WRIGHT. I do not think there was an acquittal. I understood that it was held over.

Mr. ROCKWOOD. There was no conviction?

Mr. WRIGHT. Not that I have heard of yet.

Mr. ROCKWOOD. I understood it was an acquittal. I will ask permission of the commission to supply data with respect to that. I shall also want to supply the commission with a copy of that contract between the Ontario government and the company under which the dam was constructed.

Mr. KEEFER. Is there anything in it relating to this controversy?

Mr. ROCKWOOD. It requires the construction to the highest possible type in accordance with plans to be approved by the department of public works. Afterwards plans were approved.

Mr. MIGNAULT. Do you consider that would be very material so far as this commission is concerned?

Mr. ROCKWOOD. Possibly not.

Mr. MIGNAULT. Even if you had the authority of one or both of these countries, it would not affect the commission. You would have also to obtain the authority of the commission.

Mr. ROCKWOOD. Undoubtedly, Mr. Commissioner, with reference to any increases.

Mr. MIGNAULT. This work was executed several years ago, before the commission came into being.

Mr. ROCKWOOD. It seems to me that suggestion is entirely accurate with reference to any increase above the present height of the dam.

Mr. MIGNAULT. The whole question is referred to us.

Mr. ANDERSON. It occurred to me, when statements were made this morning that actions had been brought against the power company for damage caused by the erection of the dam, that claimants in respect to that might be in a different position from claimants with respect to the damage that might be caused by the erection of works that would be constructed in pursuance of recommendations from this commission. If the commission has not already considered that, I would like that to be considered, because it does seem to me that a difference might be made. Here are works constructed and operated by the authority of both governments. The question might arise as to what the effect would be in case the commission adopted the present work as part of the work to be undertaken or purported to be undertaken in pursuance to the report made by the commission; but I do think there may be a difference between the claimants here and the claimants in other territory affected.

Mr. KEEFER. I understand the mayor of the town of Fort Frances is here, and he might wish to say something to the commission.

TESTIMONY OF DAVID CROWELL MACKENZIE.

(David Crowell Mackenzie, having been duly sworn, testified as follows:)

Mr. KEEFER. What light can you give the commission on the matters we have been dealing with?

Mr. MACKENZIE. With regard to the height of the water?

Mr. KEEFER. Anything at all.

Mr. TAWNEY. The effect of the high water on the banks?

Mr. MACKENZIE. Well, I have seen the water higher before the dam went in than it has ever been since. The bank over there is washing away. There has been some controversy over in our town with regard to that. The company has agreed to construct a dike, which is satisfactory to the town. When constructed, it would be perfectly satisfactory to the town.

Mr. KEEFER. How long ago was that agreement that you have just spoken of to construct a dike?

Mr. MACKENZIE. It was part of the agreement when they built the dam.

Mr. KEEFER. How long ago was that?

Mr. MACKENZIE. I can not remember just what year it was. It was five or six years ago.

Mr. KEEFER. Were there any steps taken toward constructing it?

Mr. MACKENZIE. Yes; they put in a temporary dike awhile ago, and I understand they are negotiating with Sir William Mackenzie, and as soon as they get his consent to certain points they deem absolutely necessary, they intend to go ahead and construct the dike.

Mr. KEEFER. I take it, as mayor of your town, you do not want to do anything to make it difficult for large industrial concerns to operate here?

Mr. MACKENZIE. That is quite true.

Mr. KEEFER. But, at the same time, you want them to see to it that in so operating they do not do damage?

Mr. MACKENZIE. That is true.

Mr. KEEFER. If this dike were constructed rapidly, it would help matters?

Mr. MACKENZIE. It would do away with a good deal of the erosion of banks. The bank is wearing away faster than before. I listened to the statement of the engineer, and I do not quite agree with him.

Mr. KEEFER. What do you say as to it?

Mr. MACKENZIE. As to the running of the boats, I say that there are about two every five minutes now.

Mr. KEEFER. He said there was greater navigation and faster boats?

Mr. MACKENZIE. Yes.

Mr. KEEFER. And that accentuates the fact that protection is necessary?

Mr. MACKENZIE. There is no doubt the protection is necessary.

Mr. KEEFER. What about Pithers Point?

Mr. MACKENZIE. That is washing away, the same as the bank is.

Mr. KEEFER. Is there any way of protecting it?

Mr. MACKENZIE. A dike would protect that in the same way. That part around the Indian school is diked now.

Mr. KEEFER. Do you find that diking at the Indian school affords all the necessary protection?

Mr. MACKENZIE. Yes.

Mr. KEEFER. And the same can be done here?

Mr. MACKENZIE. Yes.

Mr. KEEFER. If that dike were in, could you give the commission any idea what level would be injurious to the town and what would not be?

Mr. MACKENZIE. Well, if they properly diked the banks, it would be in the interest of the community to have the water raised to develop all the possible power. I think it could be raised to 500 or 501. The land up the lake would be flooded, but it is low, marshy land at any time.

Mr. POWELL. No value?

Mr. MACKENZIE. No value, or very little. Occasionally the fishermen cut wild hay off it to feed a broncho or two, but the land at no time has any great value that I have ever seen.

Mr. TAWNEY. Do you mean it is in contemplation to construct a dike or the revetment of the bank?

Mr. MACKENZIE. I beg pardon.

Mr. TAWNEY. Have they in contemplation the construction of a dike or merely the revetment of the bank?

Mr. MACKENZIE. Oh, they are going to construct a dike; that is the agreement. They are to construct a dike that will amply prevent the washing away of the bank.

TESTIMONY OF JOHN PHILIP WRIGHT.

(John Philip Wright, having been duly sworn, testified as follows:)

Mr. KEEFER. You are the gentleman referred to by the engineer?

Mr. WRIGHT. Yes; as the Indian agent.

Mr. KEEFER. Just on that point, as Indian agent do you know anything about the question of the fish of the river being affected in any way by the pollution below the falls?

Mr. WRIGHT. I do. The Indians on the Manitou and the Long Sault—

Mr. KEEFER. You will have to describe this. You know where these places are. Where is the Manitou?

Mr. WRIGHT. It is maybe 30 miles from here down the river. The Long Sault is 7 or 8 miles down farther. Those are the two rapids that are on the river. These are two reserves at each of those rapids. These Indians have been complaining ever since the paper mill has been working that the refuse coming from the mill is killing the fish and destroying their nets. We were down there the 1st of June, and there was a net raised up; it had only been down a few hours, they claimed, and it was just a mass of soft gummy stuff, and it stuck to their nets, and it took some hours to wash it off, and they claim this refuse going into the water has destroyed their fishing.

Mr. KEEFER. We have complaints of the fishing in the lake not being what it has been. Would this have any part to play in it?

Mr. WRIGHT. We have two reserves at the mouth of the river. At Hungry Hill they have complained—

Mr. KEEFER. Where is that?

Mr. WRIGHT. The mouth of the river.

Mr. KEEFER. How far from the mouth?

Mr. WRIGHT. Right at the mouth.

Mr. KEEFER. And what has been the nature of their complaint to you as agent?

Mr. WRIGHT. Well, they complain the fishing is not good. The water is dirty. The sediment of the lake seems to be impregnated through the water down there.

Mr. TAWNEY. How far is that from here? About 100 miles by the river?

Mr. WRIGHT. Fully that, I should think.

Mr. KEEFER. You have had a complaint from there?

Mr. WRIGHT. Yes; as well as the other places.

Mr. KEEFER. Have you ever made any personal inspection?

Mr. WRIGHT. No. The only inspection was at Manitou in June.

Mr. POWELL. How many Indians have you at Manitou?

Mr. WRIGHT. I have made an examination of all the seven bands, and they are supposed to be at Manitou now. I took the surrender of some of them this spring.

Mr. POWELL. How many were there?

Mr. WRIGHT. There would be 247 all told.

Mr. KEEFER. That includes all the Indians?

Mr. WRIGHT. Yes.

Mr. KEEFER. Would this pollution go out into the Big Traverse?

Mr. WRIGHT. I do not know.

Mr. KEEFER. The American fishing interests are at the mouth of the river?

Mr. WRIGHT. Yes.

Mr. KEEFER. If they have complained about the fish question, this may be an operating cause?

Mr. WRIGHT. Yes. Some one a better authority than I can tell you.

Mr. KEEFER. Will you look at this map and identify what you are speaking of as Hungry Hall?

Mr. WRIGHT. They have been taken up here.

Mr. MIGNAULT. That is at the mouth of the Rainy River, the squares marked "15" and "16" on the index map of the Lake of the Woods.

Mr. KEEFER. Speaking of the connection, could this be due to the pollution of the town in any way?

Mr. WRIGHT. No.

Mr. KEEFER. But it is the refuse from the mill?

Mr. WRIGHT. Yes.

Mr. KEEFER. Have you any knowledge of the nature of that refuse?

Mr. WRIGHT. Only that it is like ground-up stuff; it is a sticky sediment like; it sticks to their nets.

Mr. POWELL. Wood fibers?

Mr. WRIGHT. Yes.

Mr. KEEFER. Are there any chemicals put into the waters from the mill?

Mr. WRIGHT. I do not know; you can see there is something entering into the water behind the mill.

Mr. KEEFER. Where can that be seen?

Mr. WRIGHT. It can be seen right here, any time.

Mr. KEEFER. Probably some of the commission will investigate that. It is on this side?

Mr. WRIGHT. Yes.

Mr. KEEFER. The fishing interests, and the revenue from it, belong to the Province of Ontario, and if there is anything being done to affect it, we naturally wish to bring it to your attention.

Mr. POWELL. Our engineers, on the examination of boundary waters, made a report on this.

Mr. KEEFER. As to the sewage; but I did not know that it was on the manufacturing phase.

Mr. POWELL. Yes. That was bacteriological.

Mr. KEEFER. I have a suspicion that the chemical effect is rather serious.

Mr. POWELL. That was not investigated.

Mr. KEEFER. I think it ought to be investigated. You can not say anything about the chemical phase of it?

Mr. WRIGHT. I can not.

Mr. KEEFER. You have lived, as I understand, for a long while at the place called Pithers Point?

Mr. WRIGHT. Yes.

Mr. KEEFER. Pithers was the preceding Indian agent; that is the way it got its name?

Mr. WRIGHT. Yes. I went there in September, 1900, and lived there until 1906 or 1907.

Mr. KEEFER. How long have you lived in this neighborhood, or in the neighborhood of Fort Frances?

Mr. WRIGHT. Fifteen years in September.

Mr. KEEFER. Tell us about the effect of the water at Pithers Point. Do you agree with what your son spoke of, the engineer?

Mr. WRIGHT. In 1900, when we came there that fall, the water was very high for a short time, but the following years, as long as I re-

mained, until, I would say, the last five or six years, there has been no erosion of the bank along that front of the lake in that bay.

Mr. POWELL. The bay between the point and the railway?

Mr. WRIGHT. No; the bay on the lake. There is a bay on the lake and a bay on the river, but after the rising of the river the erosion has been very severe all along that shore up until it comes to Rocky Point up there in the bay. We have lost in the last five or six years, I would say, along—we call that the Indian Agent reserve—we have lost from 30 to 60 feet of land all along that shore.

Mr. POWELL. In what mileage?

Mr. WRIGHT. About a mile and a half. I have been agitating with the department for many years, and Mr. Backus promised to build a breakwater to protect that bank along that reserve. This went on for three or four years. I asked the department to have an engineer sent up, and they sent up an engineer, and he recommended that we riprap this ourselves. The riprapping is what I recommended, and I had it done a year ago last winter, about half a mile, a little over half a mile, fronting on the school property, and what we call Reserve 16A. There is yet half a mile of what we call the Indian Agency Reserve. The department proposes to subdivide, I believe, into suburban lots. It is now under consideration whether they will riprap that or not. This other riprapping I had done cost, for the half mile, \$11,000.

Mr. POWELL. Was it protected?

Mr. WRIGHT. Yes; all right. I think the remaining half mile I might get done a little cheaper. I think it is not necessary to put as much rock as I did on the other, and I think the other half mile could be done for about \$7,000; but it is caused by the dam being built here and the raising of the water on Rainy River has caused the erosion of that shore all along.

Mr. MAGRATH. The wave action?

Mr. WRIGHT. Yes.

Mr. POWELL. How deep is the loam on top that is so easily dissolved?

Mr. WRIGHT. It is the full depth; it is all sand.

Mr. POWELL. All the same character down to the water?

Mr. WRIGHT. Yes. You will find little veins of clay through it.

Mr. POWELL. It simply means that if the water is high the erosion is much more rapid than if it is low.

Mr. WRIGHT. Sure. There is one or two years that the water did not come up; three or four years ago the water did not come up to the edge. It would come up to about here, and there was no erosion whatever. Other years, before this dam was built, the water may have been high, but it was never high more than two or three weeks at a time, and then it would go down, and very little erosion would ever occur. There has been very little erosion for years past, so slight that you would hardly notice it.

Mr. POWELL. You heard the former witness speak about the character of the land around the lake generally? Do you indorse what he said?

Mr. WRIGHT. I could not hear very well what he said.

Mr. TAWNEY. Being low and light and almost——

Mr. WRIGHT. Oh, no. Speaking about the 500 bench mark, that would clean up that Pithers Point, what we call the point. I have

a map in our department showing how it would affect Pithers Point, and in the letter covering that Mr. Backus agrees to pay a big sum of money if he raises it up to the 500 bench mark and destroys that point. I do not know how much the money is, but it is quite a bit. The land that was affected last year by the high water on two reserves—that is the reserve there at Stanjikoming and Red Gut Reserve—that land at the Red Gut is about the only land that they have to cultivate. If that is raised up and flooded over it destroys their gardens, and although it may not be as valuable as some other property along on the river or other places, still it is valuable to those Indians. The land on the Stanjikoming Reserve is a large quantity, I do not know how much. The department asked me about it, and I gave a rough estimate of what I considered it, and there is some very good land in it, although it has not been cultivated. At the present time it is not very valuable, because it has not been cultivated.

Mr. MAGRATH. You are speaking of what particular land?

Mr. WRIGHT. I am speaking of the land at Stanjikoming Bay.

Mr. MAGRATH. How far from this point?

Mr. WRIGHT. Four or five miles.

Mr. POWELL. What would that land be worth an acre?

Mr. WRIGHT. I can not say.

Mr. POWELL. You can not put any value upon it?

Mr. WRIGHT. I have only been along close to the edge, and I have taken the Indians' word for what the land is worth. I have not made a personal examination of it.

Mr. POWELL. Have the Indians complained to you of the erosion?

Mr. WRIGHT. They have.

Mr. POWELL. You do not know how many acres are involved?

Mr. WRIGHT. I do not.

Mr. ROCKWOOD. Have the Indians been fishing in the lake with nets, or is that allowed?

Mr. WRIGHT. I do not know about the law, but the Indians have been always using small nets.

Mr. ROCKWOOD. Are white men permitted to fish with nets in the river?

Mr. WRIGHT. No.

Mr. ROCKWOOD. Do the Indians there, as you understand, fish there lawfully or merely by sufferance? Is there any distinction in the law?

Mr. WRIGHT. I do not know how the Ontario law is in regard to fishing, but we supply the Indians with twine for fishing, and I presume they are allowed to do that for their own use.

Mr. KEEFER. I think it is all covered by the original treaty.

Mr. WRIGHT. And this place where they are fishing is just opposite their reserves, the rapids, the Long Sault, and the Manitou?

Mr. WYVELL. How long have you lived in Fort Frances?

Mr. WRIGHT. Fifteen years.

Mr. WYVELL. Do you hold any office?

Mr. WRIGHT. I am one of the councilors.

Mr. WYVELL. Are you aware that plans have been made for the construction of a long boom, running on the Canadian side of the water, extending from a point near the turbine wheels northerly about 1,500 feet or more?

Mr. WRIGHT. Yes.

Mr. WYVELL. Such plans have been filed, have they not?

Mr. WRIGHT. I believe so.

Mr. WYVELL. And if that boom were constructed, would it not seriously interfere with the ferry service between Fort Frances and International Falls?

Mr. WRIGHT. Yes, I presume it would, unless a bridge was built over the boom.

Mr. WYVELL. Unless a bridge was built over the boom a ferry could not reach the Fort Frances side?

Mr. WRIGHT. No; certainly not anywhere where that boom was.

Mr. WYVELL. It would have to go above the boom?

Mr. WRIGHT. Yes.

Mr. WYVELL. Are you aware how far that boom extends northerly from the lower point of it, from the turbine wheel?

Mr. WRIGHT. Well, I am not sure. I was not in favor of granting booming rights as far as some of the council were. I believe that it goes to Portage Avenue; I am not sure.

Mr. WYVELL. How far northeasterly of the present ferry line would the boom extend?

Mr. WRIGHT. About two blocks.

Mr. WYVELL. More than that, is it not?

Mr. WRIGHT. I could not say how far. As I understand it, Mr. Backus has booming rights from Portage Avenue to the town dock, from the town dock down.

Mr. WYVELL. That privilege has already been granted?

Mr. WRIGHT. I understand so.

Mr. WYVELL. That is granted by the Government after full consideration of all questions?

Mr. WRIGHT. I think that is the way it stands. I do not know; I have not any authority; it is only what I——

Mr. ROCKWOOD. And that is in connection with the operation of the paper mill on the Canadian side?

Mr. WRIGHT. Yes; that is for booming rights for him on the Canadian side.

Mr. ROCKWOOD. And the Canadian Government required the construction of that mill; the Fort Frances people insisted on it?

Mr. WRIGHT. Yes; I think so.

Mr. MAGRATH. What is that?

Mr. ROCKWOOD. The Canadian Government required the construction of the paper mill on the other side and Mr. Wright says also the Fort Frances people insisted on it and these booming rights were necessary to it.

Mr. WRIGHT. Certain booming rights are necessary to it. I do not know how far it has been constructed.

Mr. ROCKWOOD. But the boom can not be constructed so as to interfere with the free passage of the ferryboat?

Mr. WRIGHT. I can not understand how they can build a boom unless they protect the ferry.

Mr. ROCKWOOD. It is possible with some small or large added expense to allow the free passage of the ferry, the same as it does now.

Mr. WRIGHT. Yes; otherwise they would have to start in above the boom.

Mr. WYVELL. It would put the ferry out of business?

Mr. ROCKWOOD. Do you, as counsel for the United States, appear for the owner of the ferry?

Mr. WYVELL. No; I simply want to have the facts brought out. I think if it is an interference with navigation it is an interesting fact that should be brought out.

Mr. WILSON. I did not know the boom had been granted. We have been asking for a hearing before the Ottawa Government and my counsel has never been able to get a statement that that boom had ever been granted.

Mr. ROCKWOOD. I do not want to create any alarm, but I understood it has been granted.

Mr. WYVELL. A ferryboat running between the two countries would be put out of commission by this. I am willing to put a witness on the stand to explain.

Mr. MIGNAULT. Perhaps you would enlighten me as to the relevancy of it?

Mr. TAWNEY. If this constitutes an obstruction that affects the levels of the waters it does not come under this reference, but it could properly be made the subject of an application for the approval of the International Joint Commission. That is the only way it could be properly considered by the commission.

Mr. POWELL. That is not in consequence of a rise of level at all?

Mr. WYVELL. No; it is clearly a matter for your decision.

Mr. MIGNAULT. We are bound by the terms of the reference.

Mr. WYVELL. It affects navigation in one way or another, therefore, I thought it was proper to call the attention of the commission to it. I would like to call a witness on one other point.

TESTIMONY OF LOUIS W. WILSON.

(Louis W. Wilson, having been duly sworn, testified as follows:)

Mr. WYVELL. Where do you live?

Mr. WILSON. I live in International Falls, Minn.

Mr. WYVELL. What position do you hold with reference to the city government of International Falls?

Mr. WILSON. I am president of the city council.

Mr. WYVELL. How long have you lived in International Falls?

Mr. WILSON. Ten years ago last May.

Mr. WYVELL. Have you recently looked up the records to find out the level of International Falls, the height above sea level?

Mr. WILSON. I have.

Mr. WYVELL. Have you reduced that to correspond with the terms used here, the bench-mark terms?

Mr. WILSON. Yes.

Mr. WYVELL. How high is the depot at International Falls above the sea level?

Mr. WILSON. The way I have reduced it just this moment, 507.89. I have just compiled that lately, and it is subject to error.

Mr. TAWNEY. Are you an engineer?

Mr. WILSON. No.

Mr. TAWNEY. Do you take the sea-level datum or the bench mark?

Mr. WILSON. 1,119.5 above sea level.

Mr. WYVELL. And you subtracted from that the figure 611.61, did you not?

Mr. WILSON. Yes.

Mr. WYVELL. You just visited the engineer's office?

Mr. WILSON. I just visited the city engineer's office at International Falls, and whether he is mistaken on that I do not know.

Mr. WYVELL. These are his figures?

Mr. WILSON. Yes.

Mr. WYVELL. And he is away to-day?

Mr. WILSON. Yes; he is in Minneapolis to-day. The boom that is asked for there, what is called the sheet-piling boom, piling pulp-wood 125 feet high with a conveyor, will both be an interference with navigation and will eventually raise the water, so that you will have a chance to hear it on both those propositions.

Mr. SAMUELSON. I spoke of a statement this morning, and I asked if the commission would like to have it. Here is the statement.

Mr. TAWNEY. Unless we are to consider the question of land values, I do not know that the statement will be of any particular use to the commission, but we will receive it.

Mr. KEEFER. Would you ask if there are any other people in Fort Frances who wish to give evidence?

Mr. TAWNEY. I do not know whether there are or not.

Mr. KEEFER. May I ask?

Mr. TAWNEY. Certainly.

Mr. KEEFER. Mr. Williams is standing. What is it you want, Mr. Williams?

Mr. WILLIAMS. I am not asking to give any evidence.

Mr. KEEFER. Perhaps you can assist the commission about the levels.

TESTIMONY OF HERBERT WILLIAMS.

(Herbert Williams, having been duly sworn, testified as follows:)

Mr. TAWNEY. What have you to say with respect to the effect of the level of Rainy River above the dam on the shores of your land?

Mr. WILLIAMS. Since the dam has been constructed, of my own knowledge, upon some of the lots that I own the shore has been washed away 50 feet.

Mr. TAWNEY. Have you examined this map?

Mr. WILLIAMS. No.

Mr. TAWNEY. It varies all the way from 18 to 48. You do not mean all the shore line has been washed away 40 or 50 feet?

Mr. WILLIAMS. No; in places.

Mr. TAWNEY. Just in places?

Mr. WILLIAMS. Yes.

Mr. TAWNEY. And that erosion has all taken place since the dam has been constructed?

Mr. WILLIAMS. In the places I have referred to.

Mr. TAWNEY. How many places have you reference to?

Mr. WILLIAMS. On the east side of Crow Street.

Mr. TAWNEY. If this dike which Mr. Wright has referred to, and which the Minnesota & Ontario Power Co. has agreed to construct there, is built, will that prevent this erosion and save the shores?

Mr. WILLIAMS. It will save what is left.

Mr. TAWNEY. Has the erosion encroached upon the streets to any extent in Fort Frances?

Mr. WILLIAMS. Yes.

Mr. TAWNEY. Has it washed any of the streets away?

Mr. WILLIAMS. It has.

Mr. TAWNEY. What street has been washed away?

Mr. WILLIAMS. At the corner of Crow and Front Streets, it is washed away in there the full width of the street.

Mr. TAWNEY. For what length?

Mr. WILLIAMS. But to get to that point it had to wash away about 40 feet of the bank first.

Mr. TAWNEY. How much has been washed away?

Mr. WILLIAMS. Before the dam was constructed there was a margin outside of the street along the bank of anywhere from, speaking roughly, 25 to 100 feet. I do not think that in any place now you will find more than 50 feet outside of the street line, and in some places you will not find anything and the water is up into the street.

Mr. TAWNEY. If the dike proposed is built, I understand you to say that the raising of the water opposite Fort Frances will have no appreciable effect upon the shore line?

Mr. WILLIAMS. It depends on the height the water is raised to.

Mr. TAWNEY. If it were raised above the dike it would?

Mr. WILLIAMS. If the water is raised to 502 the water will go in behind the dike and flood the town. The dike will have to go around the town and around a portion of the lake.

Mr. TAWNEY. The dike is contemplated to protect the city, or to protect the river banks from erosion. If a proper dike is built—

Mr. WILLIAMS. If we get a proper level, it will keep the water out; it will be very dangerous to the town to have the water raised over a certain height. It is as high now as it is safe to be; 495 is about the extreme level it should be. That is my opinion. I have lived here the last 30 years. I have been here during the construction of the whole of the works, and 10 years before that.

Mr. TAWNEY. 495 you say?

Mr. WILLIAMS. Yes; that is the extreme level to which it should go.

Mr. TAWNEY. What is it now?

Mr. WILLIAMS. 496.

Mr. ROCKWOOD. 495.55 yesterday, to be exact.

Mr. MAGRATH. It has been up to 497?

Mr. WILLIAMS. Yes.

Mr. MAGRATH. What was the result?

Mr. WILLIAMS. Well, it was up on the front street, I should judge, at that time in front of the machine works there. Another foot would fill those ditches. It would extend back about 60 feet. The saturation takes it through and it comes up on the ditches on the other side. It is sort of very loose and pliable, and the water extends back. I would like to volunteer something. It is in reference to the question that was asked about the effect of the discharge of the paper mill.

Mr. KEEFER. What about that?

Mr. WILLIAMS. Well, if any of the Commission will go and look on the American side they will see a discharge all the time—

Mr. KEEFER. Of what?

Mr. WILLIAMS. Of the liquid portion of the pulp. As the pulp passes over the machines the liquid portion is drawn away, and that consists of water acidation, blueing, and teralba—whatever is used to make a perfect paper. Then, when they operate the sulphide mill over here, all the acid is washed out of the pulp, and that is

discharged into the river, and that affects the fish; there is no doubt about that.

MR. KEEFER. This is important. I want to know about this.

MR. WILLIAMS. Take the discharge from the ground wood pulp; when that goes down the river it is washed along. When the water is shut down here for 48 hours and the rocks are exposed in the river, you will see every rock coated with a certain amount of this discharge. Some of that gets into the gills of the fish. It is worse than sawdust, because it is fibrous and clings to it. When I came here a few years ago you could go out in the morning and go out to that beautiful bay, and there would be five or six sturgeon jumping around. Go down to the dock site and take your fishing pole and you could get a mess of wall-eyed pike for your breakfast, and to-day you can get nothing. Years ago the Indians would come there and set their nets and catch two or three hundred whitefish, and you can not do it now. You could net there now, and pull up your net in two or three hours and it would be all covered with this stuff.

MR. TAWNEY. How was the water above the dam?

MR. WILLIAMS. It was good.

MR. TAWNEY. How is it now?

MR. WILLIAMS. I never fish down there now.

MR. TAWNEY. Because you can not catch anything?

MR. WILLIAMS. I have given up fishing.

MR. KEEFER. Is there any fishing above the dam? Give it straight.

MR. WILLIAMS. I was talking with a fisherman the other day; he said, "The fishing in the lake is better than it used to be."

MR. KEEFER. Rainy Lake?

MR. WILLIAMS. Yes; above the dam. The fishing in the river between the dam and Pithers Point never amounted to anything. If they wanted to fish they would go up to Pithers Point and they would get wall-eyed pike; but, as to commercial fishing, they catch more scale fish now than they used to, because the last few years there has been commercial fishing, and they have cleared out what they call the lawyers and the suckers.

MR. KEEFER. I ask for protection from the attorney general.

MR. WILLIAMS. What we call lawyers the Indians call mezzis and other people called mari. They are a fresh-water dogfish, and if you have a net set and you have a lot of whitefish in it a school of these mezzis or mari come along, they will take and grab the whitefish and bite off the tail in one bite, and they will take all the law allows and a little more. Then the destruction of these carnivorous fish has given the other fish a chance to breathe. They used to live on the young fish.

MR. KEEFER. I think we had a word yesterday for that—predacious fish.

MR. WILLIAMS. Yes. Nearly all fish are predacious. And that is why they say fishing is better than it used to be.

MR. KEEFER. That is, in the lake?

MR. WILLIAMS. Yes.

MR. KEEFER. You have described the fishing in the river.

MR. WILLIAMS. In the river the fishing is almost nil now. There is no fishing. I remember coming up her years ago, and down at Rapid River, a little stream on the American side, you could almost walk across the stream there, but the sturgeon were spawning in at the foot

of the falls—going up to spawn. The Indians down at Manitou would kill 15 or 20 sturgeon, spear them any old morning, and you can hardly get a sturgeon now at all.

Mr. TAWNEY. You say there is no fishing at all below the falls. I was here two years ago with a member of the Canadian section of the commission for two days, and I observed that there were five or six people fishing right off the rapids, right below the dam, fishing with pole and line there every day we were there. Did they not catch anything?

Mr. WILLIAMS. I think an answer would be the drowning of the worms; that is, as compared with what the fishing used to be. You can get an odd fish there, but nothing at all worth while coming down there for. You can fish all day and get nothing. There is no comparison.

Mr. TAWNEY. I saw them fishing every day we were here.

Mr. WILLIAMS. And down at the dock where this discharge is we can not get anything at all.

Mr. TAWNEY. Is that what you see in the old lock where you walk across there, the whitish mass heading up there?

Mr. WILLIAMS. Yes.

Mr. TAWNEY. I noticed it myself and did not know what it was.

Mr. WILLIAMS. Yes; that is it.

Mr. TAWNEY. It can be seen at the lock?

Mr. WILLIAMS. Yes.

Mr. TAWNEY. Is there anything else that you wish to refer to?

Mr. WILLIAMS. I might say that if it comes within the limits of the powers of the commission, if they would recommend or assist in some way in the construction of a lock at the foot of the Long Sault, it would be—

Mr. TAWNEY. That is a little outside their purview, but still it is interesting on the navigation phase. What would be the effect of a lock at the Long Sault?

Mr. WILLIAMS. It would give continuous navigation through the whole of the open season from Kenora to Fort Frances.

Mr. TAWNEY. A distance of what mileage?

Mr. WILLIAMS. A distance of 160 miles; by the opening of the lock it would continue it up to Caloo Falls, another 50 miles.

Mr. TAWNEY. How does the navigation affect your town?

Mr. WILLIAMS. Well, if that route was open, it would give an outlet for farming products to Kenora, which is an agricultural section; it would help us to that extent.

Mr. TAWNEY. Why can you not put it across by rail there?

Mr. WILLIAMS. It is a long way around.

Mr. TAWNEY. As a citizen, you are anxious to have navigation for the benefit of the town?

Mr. WILLIAMS. Yes; for the benefit of the district generally.

Mr. KEEFER. As a matter of fact, a few years ago, it was the only way of getting in and out of this country—by navigation?

Mr. WILLIAMS. Yes. It would be a good thing for the district.

Mr. KEEFER. Mr. Graham will speak of that from the steamboat point of view. As a citizen you think it ought to be maintained?

Mr. WILLIAMS. Yes. I think it would be advantageous for the whole community.

Mr. ROCKWOOD. Do you know how much the population increased in this immediate vicinity since the time the dam was built and these industries established?

Mr. WILLIAMS. On both sides?

Mr. ROCKWOOD. Yes.

Mr. WILLIAMS. I should think before these industries were established there was probably a population in the immediate vicinity of a thousand.

Mr. ROCKWOOD. How many now?

Mr. WILLIAMS. I should think 6,000, or possibly 7,000.

Mr. ROCKWOOD. And it is because of these industries, is it not, pretty largely?

Mr. WILLIAMS. Oh, yes; there is no question about it.

Mr. TAWNEY. Within what time has that increase taken place?

Mr. WILLIAMS. That increase has taken place within 12 years.

Mr. TAWNEY. An increase of between six and seven thousand in 12 years?

Mr. WILLIAMS. Yes.

Mr. ROCKWOOD. Don't you know it is a fact that the sturgeon has pretty much disappeared, not altogether, but largely disappeared from the Lake of the Woods also?

Mr. WILLIAMS. For the same reason.

Mr. ROCKWOOD. Had that disappearance not gone far before these mills were established?

Mr. WILLIAMS. Oh, yes; it had been going down.

Mr. ROCKWOOD. But, so far as sturgeon is concerned, is it not because large numbers have been taken and they are slow in propagation?

Mr. WILLIAMS. I did not mention sturgeon specifically myself. I spoke of the increase in scale fish. The destruction of sturgeon would increase the scale fish, because sturgeon are the very worst fish in the world for devouring spawn.

Mr. ROCKWOOD. I understood you to say that every morning there were four or five jumping in the bay. Did I misunderstand you?

Mr. WILLIAMS. No, that is correct.

Mr. ROCKWOOD. Have they not disappeared on account of the great numbers that have been destroyed?

Mr. WILLIAMS. And their spawning beds have also been destroyed.

Mr. ROCKWOOD. Did the disappearance not take place largely before the dam was constructed?

Mr. WILLIAMS. At the time I speak of there were five or six jumping around in the bay; they had been fished pretty heavily up to that time.

Mr. ROCKWOOD. Did the lessening of the number of sturgeon occur very largely before this dam was put in at all?

Mr. WILLIAMS. No. The heaviest fishing of the sturgeon on the Lake of the Woods was before the construction of this dam. The fishing has been lighter since; but, at the time I am speaking of, the heavy fishing had been cut down to light fishing, and the sturgeon was still coming up and jumping around.

Mr. ROCKWOOD. You will remember I was here 20 years ago.

Mr. WILLIAMS. Yes.

Mr. ROCKWOOD. Did you not see me sit there by the hour and come back without anything?

MR. WILLIAMS. I can not say that I did.

MR. ROCKWOOD. Don't you remember?

MR. WILLIAMS. Twenty years ago?

MR. ROCKWOOD. Yes.

MR. WILLIAMS. You could have sat for a whole day without any bait on your hook.

MR. ROCKWOOD. I had my hook baited. Fishing was more or less precarious then, as it always is.

MR. WILLIAMS. Pretty good fishing then.

MR. ROCKWOOD. And fairly good yet?

MR. WILLIAMS. No; it is very poor below the falls.

MR. KEEFER. Is there anybody else here from Fort Frances who desires to make any statement? I see Mr. Moodie, chief engineer of the C. N. R., and I think he is on record with you, and he does not wish to take up time. He has given you certain data.

TESTIMONY OF W. T. MOODIE.

(W. T. Moodie, having been duly sworn, testified as follows:)

MR. KEEFER. You have already on file with the commission a certain figure, and you do not wish, on account of your railway, the Canadian Northern, the water to be raised past that point?

MR. MOODIE. Yes. I think that was stated at the last hearing of the commission at this point.

MR. KEEFER. There are three gentlemen here who were not present then; you might restate it.

MR. MOODIE. We stated then, and we repeat now, that we are agreeable to an elevation of 597 being maintained at the dam, and any higher elevation than that on the Lake of the Woods would produce high water, that would be very detrimental to our track structures. We have some fixed structures which are designed and constructed to conform to that elevation; consequently any higher elevation would be detrimental.

MR. WYVELL. Are you familiar with conditions of the river in Fort Frances and International Falls?

MR. MOODIE. No, I am not; not of the river.

MR. WYVELL. Are you familiar with the location of the booms?

MR. MOODIE. No; just in a general way.

MR. KEEFER. Williams has lived here all his life, and would be better able to tell you as to that.

MR. ROCKWOOD. Would you be kind enough to tell us what the structures are?

MR. MOODIE. The most important one is a swing span, or a lift span.

MR. ROCKWOOD. Is that up here at the falls?

MR. MOODIE. No; it is on the lake. We have a solid rock fill across the lake, and by law we had to provide a lift span. There is a part of the apparatus in connection with the lift span not very high above the surface of the lake, and that design was completed in accordance with a certain maintenance of the dam, 497. We took into account the wave action, and so forth, on that structure.

MR. ROCKWOOD. Supposing you had to make changes to 500, what would be the expense in making that change?

MR. MOODIE. I would not like to quote you a figure off hand, but it would be a very great expense.

Mr. ROCKWOOD. Would you have to change the fill itself, or simply the lift—the apparatus immediately connected with the lift?

Mr. MOODIE. Well, I will answer you in this way, that if we did not change the fill the advantage of keeping it at its present height or having constructed it at its present height would be largely lost; that is, we put it 10 feet above the elevation of the lake, and now it would only be 7 feet. We would be the sufferers.

Mr. ROCKWOOD. The bridge has to be opened for all considerable craft?

Mr. MOODIE. Yes; that is, the particular lift span.

Mr. ROCKWOOD. Can you not give any idea what the expense would be?

Mr. MOODIE. I would not like to give you a figure off hand, but it would be an expense probably equal to the construction of at least the superstructure of the bridge.

Mr. ROCKWOOD. About how much would that be?

Mr. MOODIE. It is not in my department; it pertains to the bridge engineer.

Mr. ROCKWOOD. You can not tell whether it would be \$5,000 or \$10,000?

Mr. MOODIE. It would be more than either of these figures.

Mr. ROCKWOOD. Would it be as much as possibly \$20,000?

Mr. MOODIE. It would be in the neighborhood, I should say, of \$20,000 or \$25,000. Before leaving, I might say that that is not the bridge most seriously affected. There is a long trestle across the Little Otter Tail, and during the summer of last year, July and August, we had the water up to the bottom of the stringers on that trestle; that is, the bridge that would be most seriously affected on the Rainy Lake by higher water than the 497 on the dam.

Mr. ROCKWOOD. That is across what?

Mr. MOODIE. Little Otter Tail; bridge 203-A, if I mistake not.

Mr. ROCKWOOD. About how large?

Mr. MOODIE. Between five and six hundred feet, the present timber trestle.

Mr. POWELL. Would it involve much raising of the embankment?

Mr. MOODIE. Our embankment is approximately a mile and a half in length. A rise in that embankment would mean the raising of the embankment in places upwards of a hundred feet high.

Mr. TAWNEY. He asked you whether a raise in the level would necessitate a raise in the embankment?

Mr. MOODIE. A raise of an embankment which is over 100 feet in height in places would be difficult; in places it is 107 feet, approximately 97 below water and 10 above water, so that embankment means a large amount of rock, and it would involve considerable expense.

Mr. ROCKWOOD. Do you mean if the surface of the lake were raised above 497 you would have to lift the whole track?

Mr. MOODIE. No; I was answering the question about the cost of raising the embankment.

Mr. ROCKWOOD. What is the effect if the water were raised above 497? Would it be necessary to lift the whole track?

Mr. MOODIE. Yes; it would be.

Mr. ROCKWOOD. This rock fill would not safely stand with the water any higher than it is at 497?

Mr. MOODIE. No; it would not.

Mr. TAWNEY. Why not?

Mr. MOODIE. It was placed at a certain elevation, the elevation that it is at present, for good and sufficient reasons, for wave action on the lake—rough water on the lake—and if the water were to be raised 3 feet, we would have to raise the—

Mr. ROCKWOOD. Would it be necessary to raise it?

Mr. MOODIE. We might get along without raising it, but if the water were raised 3 feet, it would be difficult.

Mr. POWELL. How would it be necessary to provide against wave action if it was stone?

Mr. MOODIE. The wave action is pretty strong on the lake; you will remember the fill goes across.

Mr. POWELL. There is quite a current?

Mr. MOODIE. Oh, yes; there is all the current practically of the Rainy River except what is on the American side.

Mr. ROCKWOOD. Are you an engineer?

Mr. MOODIE. Yes.

Mr. KEEFER. Is there anybody else here from Fort Frances who wants to give evidence, either in connection with fisheries or land damages, or navigation?

Mr. ROCKWOOD. If there is nobody else ready, I want to recall Mr. Bernard, if he is here. I wanted to ask Bernard in reference to the effect on navigation at Rainy Lake. If it is conceded this high water is greatly advantageous to navigation on Rainy Lake, I will not take any time. If there is a question about that, I will call him.

Mr. TAWNEY. I do not know that there is any question or that it is conceded that it is a benefit. I have heard the question discussed both ways, as to what effect it had on Rainy River.

TESTIMONY OF ALBAN BERNARD.

(Alban Bernard, having been duly sworn, testified as follows:)

Mr. ROCKWOOD. What is your occupation?

Mr. BERNARD. Boatman.

Mr. ROCKWOOD. Describe a little more specifically what you do.

Mr. BERNARD. I have launches for hire. I take parties out on the lake here.

Mr. ROCKWOOD. Do you run your own boat?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. What kind of boat?

Mr. BERNARD. I have a 40-foot gasoline launch.

Mr. ROCKWOOD. How long have you run it?

Mr. BERNARD. I have run on the river and lake about eight years.

Mr. ROCKWOOD. You run from the dock at International Falls?

Mr. BERNARD. Yes; out on the lake.

Mr. ROCKWOOD. How far on the lake?

Mr. BERNARD. To Kettle Falls.

Mr. ROCKWOOD. In to Rat Route?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. You began running before the dam was completed and the water raised?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. Just describe what the effect is of the higher water so far as navigation is concerned.

Mr. BERNARD. Why, it helps navigation quite a bit; better than low water.

Mr. ROCKWOOD. At what particular points is it better?

Mr. BERNARD. On all the points; any shore. We have no docks; we have to land on shores. We can get at the shores now, and we could not at low water.

Mr. ROCKWOOD. Are there many places on Rainy Lake where the water is shallow?

Mr. BERNARD. Oh, yes; a great many places.

Mr. ROCKWOOD. And places where you have to avoid in low water?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. In the higher places you have freer navigation and can approach the shore?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. How about the rapids at Pithers Point?

Mr. BERNARD. Why, there is not much of a rapid now compared to what it used to be. They are almost gone.

Mr. ROCKWOOD. What were the difficulties, if you can describe them, so that I can understand? Perhaps others will understand better than I do, but just describe them.

Mr. BERNARD. It used to be a very narrow channel and very rapid water, and now it is wide and not much of a rapid.

Mr. ROCKWOOD. How about the question of power in rising over those rapids when the fall was greater?

Mr. BERNARD. It would naturally take more power to drive a boat up than it does now.

Mr. ROCKWOOD. Have you known of accidents and loss of life in the rapids?

Mr. BERNARD. Yes; there has been a number of lives lost in the rapids.

Mr. ROCKWOOD. In the matter of safety, is the danger less or greater than it was before?

Mr. BERNARD. Why, it is less.

Mr. ROCKWOOD. You have not run on the river below, have you?

Mr. BERNARD. I have, but not very much.

Mr. ROCKWOOD. I call your attention to Brule Narrows. Will you tell the commission about these, where they are located, and what the difficulties were?

Mr. BERNARD. The Brule Narrows is a narrow portion between two big parts of the lake, and in low water it is hardly possible to get through there, because it is a very crooked and very narrow channel; in high water you can go almost any place in it.

Mr. ROCKWOOD. Where are those narrows?

Mr. BERNARD. They are located about halfway to Kettle Falls, about 21 miles from here.

Mr. ROCKWOOD. At which end?

Mr. BERNARD. It is on the boundary between this side and the Canadian side. It comes in from the north.

Mr. ROCKWOOD. But is the mouth this side or the other side of the narrows?

Mr. BERNARD. It is about due north from the narrows; they do not come in the same place.

Mr. TAWNEY. Are there many islands in Rainy Lake?

Mr. BERNARD. Yes, sir; several hundred; I might say a thousand, possibly.

Mr. ROCKWOOD. Are any of them improved that are in the vicinity of International Falls?

Mr. BERNARD. No; there is no improvements.

Mr. ROCKWOOD. Are there any summer homes up there?

Mr. BERNARD. Yes; there are some summer homes.

Mr. ROCKWOOD. How many?

Mr. BERNARD. Oh, possibly, all over the lake, 50.

Mr. ROCKWOOD. Are there any summer hotels on the shores of the lake?

Mr. BERNARD. Yes; there is two on the American side and I do not think there is any—I beg pardon, there are three.

Mr. ROCKWOOD. Have they been built recently?

Mr. BERNARD. They have been built the last six years.

Mr. ROCKWOOD. Does the level of the lake effect the occupants of these islands or these summer hotels in any way?

Mr. BERNARD. The high water benefits them, if anything.

Mr. ROCKWOOD. The higher the water the greater the benefit would be, because they can get to them?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. Are there sites for any more hotels?

Mr. BERNARD. Oh, indeed; yes.

Mr. ROCKWOOD. There are?

Mr. BERNARD. Oh yes; there are lots of them.

Mr. ROCKWOOD. Are there many summer tourists around here in the Rainy Lake during the summer?

Mr. BERNARD. Yes; quite a few.

Mr. ROCKWOOD. The shores of the lake are used generally for that purpose?

Mr. BERNARD. Islands, mostly.

Mr. ROCKWOOD. Where do these people come from mostly, that visit here?

Mr. BERNARD. From the South, Minneapolis, St. Paul, and still farther; Chicago, some of them.

Mr. ROCKWOOD. Is that class of business growing?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. In the summer time?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. How recently have there been any summer homes built on these islands?

Mr. BERNARD. There were some families came in this summer.

Mr. ROCKWOOD. Are they coming in every year?

Mr. BERNARD. They are coming in every year.

Mr. ROCKWOOD. Has there been much travel, or don't you know, down Rainy River and across the Lake of the Woods?

Mr. BERNARD. I do not know.

Mr. ROCKWOOD. Have the occupants of these summer homes any means of reaching them except by the lake?

Mr. BERNARD. Just by the lake, that is all.

Mr. ROCKWOOD. They run from here or Ranier?

Mr. BERNARD. From here, Ranier, or Fort Frances.

Mr. ROCKWOOD. How many launches are in operation?

Mr. BERNARD. Hired or private?

Mr. ROCKWOOD. Altogether.

Mr. BERNARD. Possibly 300 altogether.

Mr. ROCKWOOD. Above the falls?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. Between Rainy River and Rainy Lake?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. Is the channel between these islands hazardous and dangerous?

Mr. BERNARD. Yes.

Mr. ROCKWOOD. Why?

Mr. BERNARD. Rock reefs.

Mr. GLENN. Were there any summer residences here before the dam was put in?

Mr. BERNARD. No.

Mr. GLENN. None at all?

Mr. BERNARD. The two railroads came in here about the same time; there was no way of getting in here until the railroads came.

Mr. GLENN. What effect has the dam had upon them? First take it above the dam.

Mr. BERNARD. Some of the fishermen are complaining because it drowns out the shallow places where they set their nets.

Mr. GLENN. What effect has it had below the dam?

Mr. BERNARD. I do not know.

Mr. MAGRATH. Have you had any experience in other inland tourist waters?

Mr. BERNARD. I have worked on Lake Minnegenka.

Mr. MAGRATH. How do you compare these waters for tourist purposes with other places? Do you look for heavy development of tourist traffic on these inland waters?

Mr. BERNARD. I do, sir.

Mr. TAWNEY. Explain why.

Mr. BERNARD. It is a greater and better lake for tourists than I have ever seen, with the exception of the St. Lawrence River. It is about the same style of lake. It has a great many islands, and the lake is large, and it is a beautiful place.

Mr. KEEFER. As a highway for the settlers on either side of the bank, what would be your description of the river below the falls?

Mr. BERNARD. I do not think it is much of a highway. They are getting highways built on either side.

Mr. KEEFER. But I am speaking of navigation—boats going up and down. The *Kenora* has been coming here. You have heard Mr. Graham about that. You do not think there is any navigation there worth speaking of; is that what you wish to convey?

Mr. BERNARD. I wish to convey that the river is not very fit for navigation.

Mr. KEEFER. With a lock at the Sault?

Mr. BERNARD. That would be fine.

Mr. KEEFER. What would be the importance of having that river preserved as to its navigability?

Mr. BERNARD. It would be a good thing.

Mr. KEEFER. For both sides of the line?

Mr. BERNARD. Yes.

Mr. KEEFER. And this commission in dealing with the matter would be wise in taking that into cognizance, you say as a witness?

Mr. BERNARD. Yes.

Mr. KEEFER. What is necessary, besides that lock, would you say, as a boatman?

Mr. BERNARD. I do not understand you. There must be a dam in connection with the lock.

Mr. KEEFER. Would that give navigation all the way to Kenora?

Mr. BERNARD. Yes.

Mr. KEEFER. And is your description of Rainy Lake as a tourist resort applicable also to the Lake of the Woods?

Mr. BERNARD. I do not know that lake.

Mr. TAWNEY. How long did you say you had been running your launch up Rainy Lake to Kettle Falls?

Mr. BERNARD. I have owned boats above seven years. I have worked on boats before that.

Mr. TAWNEY. You, then, ran a boat up there before this dam was built?

Mr. BERNARD. Yes.

Mr. TAWNEY. And you have run a boat up there since?

Mr. BERNARD. Yes.

Mr. TAWNEY. Are you acquainted with the shore line of the lake between here and Kettle Falls?

Mr. BERNARD. On the American side.

Mr. TAWNEY. Will you explain to the commission how the shore line has been affected since the dam has been constructed?

Mr. BERNARD. You can get farther back in the country.

Mr. TAWNEY. Has it overflowed much land?

Mr. BERNARD. It has overflowed a great deal of land.

Mr. TAWNEY. Are you acquainted with the value of land up there?

Mr. BERNARD. There is very little land sold. I do not think there is any value on the land, except the State land——

Mr. TAWNEY. What is the character of the land?

Mr. BERNARD. The overflowed land is all swamp land, a great deal of it.

Mr. TAWNEY. What is the character of the land along the shore of the lake generally?

Mr. BERNARD. The general character is rock.

Mr. TAWNEY. What is the height of the shore?

Mr. BERNARD. The rocky shore is all the way from 4 feet to 20 at this stage of water.

Mr. TAWNEY. How much of that shore line is rocky?

Mr. BERNARD. The majority of it.

Mr. KEEFER. You spoke of a lock at the Sault along the Sault Rapids, and you are familiar with the place?

Mr. BERNARD. I have gone through the Rapids.

Mr. KEEFER. You know them?

Mr. BERNARD. Yes.

Mr. KEEFER. Would that be affected by the level of the Lake of the Woods?

Mr. BERNARD. You would have to raise the Lake of the Woods very high in order to affect the Sault Rapids.

Mr. KEEFER. I do not know that I need bother with that, because we have the engineering evidence on it.

Mr. TAWNEY. Yes. Are there any cultivated farms on the Minnesota side of the Rainy Lake on the shore?

Mr. BERNARD. Yes; there is some.

Mr. TAWNEY. How many?

Mr. BERNARD. I believe it is about half a dozen, but I do not recollect; there was some farther back.

Mr. TAWNEY. Are you acquainted with the shore of Lake Namakan?

Mr. BERNARD. No.

Mr. TAWNEY. You are not?

Mr. BERNARD. No.

Mr. TAWNEY. You did not go above that?

Mr. BERNARD. No.

Mr. TAWNEY. Is there much land up there where the hay is cut?

Mr. BERNARD. On the Minnesota side of Rainy Lake?

Mr. TAWNEY. Yes?

Mr. BERNARD. Yes; there is some hay land.

Mr. GLENN. What kind of land is those farm lands?

Mr. BERNARD. There is not a great deal of land fit for cultivation up there, only just between the rocks; that is, just on the lake shore.

Mr. GLENN. What is it worth an acre?

Mr. BERNARD. I do not think there is any price set on it; there is very little land changed hands; there is land sold out here about 7 miles from here for \$100 an acre.

Mr. GLENN. But on the lake?

Mr. BERNARD. On the lake, there is land sold for \$100 an acre, and other property less than that a great deal.

Mr. POWELL. For farming?

Mr. BERNARD. No; just for summer homes.

Mr. POWELL. Just a few fine locations?

Mr. BERNARD. Yes.

Mr. POWELL. Up on the islands is there any farming land at all?

Mr. BERNARD. No; they are not fit for farming. Among the rocks you might find a little plat of ground that is fit for cultivation, but not a great deal.

Mr. POWELL. And how far out are these farms; about 10 miles?

Mr. BERNARD. Yes; all the way from next the town here back.

Mr. TAWNEY. Away from the lake?

Mr. POWELL. Ten miles from the bridge?

Mr. BERNARD. There are some farms on the river here, you know, on the Rat Route River; there are some farms alongside of that.

Mr. POWELL. Is that between here and Kettle Falls?

Mr. BERNARD. Yes; it comes out in Black Bay.

Mr. POWELL. These farms are not low farms?

Mr. BERNARD. Yes; next the river they are low.

Mr. POWELL. And then they rise up?

Mr. BERNARD. Yes; that is close to the lake.

TESTIMONY OF FRED SMITH.

(Fred Smith, having been duly sworn, testified as follows:)

Mr. ROCKWOOD. Where do you live?

Mr. SMITH. Lowell, Minn., 20 miles west of here.

Mr. ROCKWOOD. On the bank of the river?

Mr. SMITH. Yes.

Mr. ROCKWOOD. How long have you lived there?

Mr. SMITH. Since 1888; 27 years.

Mr. ROCKWOOD. You were formerly a county commissioner?

Mr. SMITH. Yes.

Mr. ROCKWOOD. Are you now?

Mr. SMITH. No.

Mr. ROCKWOOD. Did you run boats on Rainy River?

Mr. SMITH. I did.

Mr. ROCKWOOD. Just tell the commission your experience, and particularly with reference to such differences as you observed after the construction of the dam and the operation of the mill.

Mr. SMITH. Well, the difference is that we get a more uniform stage of water now than we did previously. Take it, for instance, early in the spring, when the Rainy River would open up before the freshet came down, it would be extremely low, until such times as the freshets came down the river, and that would last till——

Mr. ROCKWOOD. Do you mean extremely low?

Mr. SMITH. It would be before the freshets came down the river; that would usually carry good navigation until such times as the water came down the lake. Take a year like this, with the amount of rainfall we have had, this water would run off in Rainy Lake probably about the 5th of October; then, following that, the water would be extremely low; but since the dam has been put in we have a more uniform stage. I do not mean to say we are getting more water than we did before, but we are getting it more uniform; it holds it back in high water and lets it out about the same volume.

Mr. ROCKWOOD. So that the periods of very low water are gone?

Mr. SMITH. Yes.

Mr. ROCKWOOD. Do you consider that an advantage to navigation?

Mr. SMITH. I do. The boatmen all claim so who are running boats there now.

Mr. ROCKWOOD. What is the largest boat that operates on the river?

Mr. SMITH. On the American side?

Mr. ROCKWOOD. On either side.

Mr. SMITH. The *Agwinde*.

Mr. ROCKWOOD. Is that larger than the *Kenora*?

Mr. SMITH. Well, the *Kenora* has not been running up here, with the exception of this summer; so that the *Agwinde* is really the only boat.

Mr. ROCKWOOD. But the *Kenora* was able to run all summer?

Mr. SMITH. No; not all summer. She only ran while the extreme high water was on.

Mr. POWELL. What is the draught of the *Agwinde*?

Mr. SMITH. I think it draws about $2\frac{1}{2}$ feet; of course, it takes more than $2\frac{1}{2}$ feet to run it to go over rock.

Mr. POWELL. Stern wheeler?

Mr. SMITH. Yes; a very nice boat.

Mr. ROCKWOOD. Where is the difficulty, on the rapids, or where?

Mr. SMITH. I do not know that they had any difficulty this year.

Mr. ROCKWOOD. I do not mean for the *Agwinde*, but for boats of deeper draft?

Mr. SMITH. Oh, all along the river, the rapids especially.

Mr. ROCKWOOD. By the rapids, you mean the Long Sault?

Mr. SMITH. Yes.

Mr. ROCKWOOD. And the Manitou?

Mr. SMITH. Well, there is a good channel in the Manitou. The Sault is long and crooked.

Mr. KEEFER. You have been connected with the early navigation here, have you not?

Mr. SMITH. Yes.

Mr. KEEFER. What boats were you on?

Mr. SMITH. I have been on every one that ever came up the river, I think.

Mr. KEEFER. Name a few.

Mr. SMITH. Canadian boats?

Mr. KEEFER. All kinds; it is a matter of navigation, not Canadian or American?

Mr. SMITH. I think I can give you all. There used to be the *Shamrock*, a boat about 78 feet long, a good-sized boat; and a boat called the *Thistle* for years ran up here; the *Maple Leaf*, and the *Kenora*, and the *Agwinde*, besides smaller boats; also a little boat ran up here called the *Clipper*, from Kenora, used to make regular trips here.

Mr. KEEFER. How do you find the freight rates along the river by water as compared with rail?

Mr. SMITH. Well, I am on the American side, and I have not got the Canadian freight rates.

Mr. KEEFER. Can you answer my question, even though you are on the American side; it makes no difference. Do you know any difference in the rates—supposing you want to send something from Emo up here?

Mr. SMITH. By boat and rail, I could not answer you.

Mr. KEEFER. What sized place is Emo?

Mr. SMITH. Four or five hundred population.

Mr. KEEFER. There are several little villages between here and the mouth of the river on both sides?

Mr. SMITH. Yes; especially on the Canadian side—Emo, Stratton, Rainy River, Dublin, and Crowther.

Mr. KEEFER. Rainy River is a place of two or three thousand population?

Mr. SMITH. Yes.

Mr. KEEFER. Do I understand you to say, as a boatman, that if a lock were put in at the Long Sault they could have river navigation?

Mr. SMITH. It would help navigation; no doubt about that.

Mr. KEEFER. As a man who has operated on these boats, speaking of the Lake of the Woods, would you advise, for navigation purposes, high or low water?

Mr. SMITH. High water is better on the river, no doubt.

Mr. KEEFER. I am speaking of the Lake of the Woods, with these boats you speak of?

Mr. SMITH. High water would be better.

Mr. KEEFER. You heard the last witness speaking of Rainy Lake and the advantage of high water?

Mr. SMITH. Yes.

Mr. KEEFER. The same thing applies to the Lake of the Woods?

Mr. SMITH. Yes.

Mr. GLENN. Are there more or less boats on the lake now than then?

Mr. SMITH. More.

Mr. KEEFER. Which lake?

Mr. GLENN. The Lake of the Woods.

Mr. SMITH. I thought you were speaking of Rainy Lake.

Mr. GLENN. How about Lake of the Woods?

Mr. SMITH. I think it prevails in both places.

Mr. GLENN. How about Rainy River?

Mr. SMITH. We have smaller boats now. Of course, the railroad handles all the heavy freight, and all the freight they get is the little picking up between places and a big boat does not pay under the conditions.

Mr. KEEFER. Mr. Graham and other men give other causes for that—the uncertainty of the navigation. We will not bother you on that. There used to be considerable tourist traffic by these boats in here, was there not?

Mr. SMITH. No; I do not think there was.

Mr. KEEFER. We used to see it advertised a great deal.

Mr. SMITH. It was advertised very heavy, but there never was a good tourist trade for some reason or other. I think the route was too long and they traveled a good deal in the night. The Lake of the Woods is a beautiful lake and beautiful scenery, but as a rule they make it always in the night to avoid the bad weather.

Mr. KEEFER. Do you know how many islands there would be in the Lake of the Woods?

Mr. SMITH. I have heard there was 5,000.

Mr. KEEFER. I have heard people say two or three times that many.

Mr. SMITH. I have heard as high as 10.

Mr. KEEFER. I have heard as high as 30, but it is a beautiful resort?

Mr. SMITH. Yes.

Mr. KEEFER. A large number of cottages?

Mr. SMITH. Yes.

Mr. MAGRATH. You say you are not very familiar with the route between here and Kenora?

Mr. SMITH. Oh, I have been over it a great many times in former years.

Mr. KEEFER. And you know the sand bars at the mouth of the river?

Mr. SMITH. Yes.

Mr. KEEFER. Have you any theory as to what has caused those bars?

Mr. SMITH. Why, yes; I think those bars were caused by the heavy winds on the lake. It is a sandy lake—the western part of the lake, the beautiful bay—and I think a northwest wind naturally washes the sand into the mouth of the river and, naturally, there is a certain amount of sediment runs out of the river which has a tendency to form a bar.

Mr. KEEFER. When did you first commence to sail between the mouth of the Rainy River and Kenora?

Mr. SMITH. The first trip I made there was in 1887.

Mr. KEEFER. Did you follow it up?

Mr. SMITH. I never followed it up as a business. I traveled on the boats a good deal, but as a business I got engaged on a steamboat

on this side years later, but I did not command the boat. I had an interest in it, and traveled the length of the river often.

MR. KEEFER. You have paid no particular attention to those sand bars?

MR. SMITH. No; only the little difficulty I have had when I was on boats going out; if they would get into a storm they would be very careful about going in; in fact, I have been on several times when they were laid up for 24 hours.

MR. POWELL. Lately, or some years ago?

MR. SMITH. Some time ago; but after they raised the level of the lake, I do not think they had as much trouble as they did in former years. Of course, I am not so familiar with them in later years.

MR. ROCKWOOD. Do you know of boats having trouble there in the first year you were here?

MR. SMITH. At the mouth of the river?

MR. ROCKWOOD. Yes; or among the first years?

MR. SMITH. Yes; it was quite shallow, but they did not run as large boats then as they have since, and there was not as much business. They had some towboats there towing logs, but they made very few trips in the summer, but as years rolled on, and they put on bigger boats and more trips made, they met with more difficulty.

MR. KEEFER. But in the very first years that you traveled back and forth on the boats, did you at the time learn that there were difficulties of navigation at the mouth caused by the sand bar?

MR. SMITH. Yes, there was.

MR. STEWART. What year was that, when you say you remember difficulties on the sand bar?

MR. SMITH. Oh, that is away back, probably in the nineties, and I could not recall just the year, but it was various years.

MR. STEWART. You had difficulties then?

MR. SMITH. Yes.

MR. STEWART. Did you have difficulty in 1890?

MR. SMITH. I could not say that particular year. I think in 1890 we had high water, but another year the water would get low. That sand bar has always been there.

MR. STEWART. Did you ever know it to carry 18 feet of water into the river?

MR. SMITH. There is no boat draws that.

MR. STEWART. Did you ever know it would come in with that draft?

MR. SMITH. Possibly, but it would be very difficult to get into that 18-foot channel.

MR. STEWART. What is a safe draft to use on a reasonably safe course in the channel?

MR. SMITH. I think that is a question for some captains who have been more familiar with that. I was only a passenger, and I know they met with these difficulties, and it was very shallow, and we tied up when the channel was narrow and there was a wind blowing. They were afraid they could not follow the channel.

MR. STEWART. That was in the early days before the dam?

MR. SMITH. Yes.

MR. ROCKWOOD. Taking the river as you have known it, the last four or five years, would navigation be dependable for boats of good

large useful size on the river, if the Long Sault Rapids were made easy and safe?

Mr. SMITH. It would help; I should say it would help.

Mr. STEWART. Would there be dependable navigation with these rapids?

Mr. SMITH. If those rapids were improved?

Mr. STEWART. Yes.

Mr. SMITH. That would depend largely how high the dam was built.

Mr. STEWART. The height of the dam would not particularly affect the water below?

Mr. SMITH. The farther up it backed the more water they would have—

Mr. STEWART. But taking the river as it has been the past four years, would there be dependable navigation if the Long Sault Rapids were improved?

Mr. SMITH. If the water was raised, they would have clear sailing, but they have been able to run the last two or three years successfully when they wanted to run, but the more the better; it would help.

Mr. BERKMAN. Do you know that it has been necessary to dredge the mouth of the Rainy River since water has been piled up artificially by the Norman Dam?

Mr. SMITH. I know they did do it.

Mr. BERKMAN. The last two or three years?

Mr. SMITH. Yes.

Mr. BERKMAN. When the water has been extremely high it has been necessary to dredge to get the boat *Kenora* over it. Is it not true that they used to turn the boats around and come in stern first, in running over sand bars?

Mr. SMITH. Well, not to my knowledge; I never knew them to back in.

Mr. BERKMAN. When you were along they have always gotten over; so that it was not necessary to turn around and go over that way?

Mr. SMITH. No. I think they always got through without turning around when I happened to be on.

Mr. KEEFER. Are you familiar with the south shore of the lake at the mouth of the river, as it was in 1887 and along there?

Mr. SMITH. Yes.

Mr. KEEFER. Just describe to the commission what it was like?

Mr. SMITH. At the mouth of the river?

Mr. KEEFER. Yes; from there over to Warroad?

Mr. SMITH. That is mostly very low land on the Lake of the Woods; the bank would be quite low; when I went there it was very low water. I walked over it to the mouth of the river, so that I know something about it, but the lake was quite low there.

Mr. KEEFER. During that period have you seen it high?

Mr. SMITH. I have not been there since it was high.

Mr. KEEFER. How high have you seen the Lake of the Woods generally? You have seen it at a low stage?

Mr. SMITH. I have been there after they put it up to the level; after that dam was put there

Mr. KEEFER. Have you noticed the high-water marks on the rocks when you were steamboating from *Kenora* here?

Mr. SMITH. Yes; I have.

Mr. KEEFER. Did you find those there before you were operating in 1887?

Mr. SMITH. Yes; they have always been there.

Mr. KEEFER. Those are marks of what?

Mr. SMITH. High water

Mr. KEEFER. No question of that?

Mr. SMITH. No.

Mr. KEEFER. Do you know how much higher they are than the water now?

Mr. SMITH. Off hand, I would say a couple of feet.

Mr. KEEFER. Have you ever seen during your period the water up to these marks?

Mr. SMITH. Yes; I think I have seen the highest water that has been here in 50 years. They claim here that in 1900 it was the highest it had been for 50 years. I was on Rainy Lake and Lake of the Woods at that time.

Mr. KEEFER. Do you know if it was up to this mark?

Mr. SMITH. I think it was. I think the highest it was was in 1900.

Mr. KEEFER. You are not sure, but you think that is the period?

Mr. SMITH. I might be mistaken in the year, but I think it was 1900.

Mr. KEEFER. Do you know how the high water affected the Sault Rapids?

Mr. SMITH. Yes; I have been over it several times.

Mr. KEEFER. Much simpler to go up?

Mr. SMITH. Yes; the Manitou is worse; the higher the water the worse it is on the Manitou.

Mr. KEEFER. Is the Manitou between here and the Sault?

Mr. SMITH. Seven miles this side.

Mr. ANDERSON. What was the cause of the high water in 1900?

Mr. SMITH. Just rain.

Mr. ANDERSON. How long did it continue?

Mr. SMITH. It started about the middle of July, and it rained till the close up; there was hardly a day it did not rain a little.

Mr. KEEFER. When did it reach the high stage in 1900?

Mr. SMITH. I think it was up at its full height the time the river froze up.

Mr. KEEFER. I am told it was 1,062.3 in November of that year; so that your memory appears to be accurate.

Mr. SMITH. If I had known I was to be asked this, I could have got the information.

Mr. POWELL. In old times was there greater range of levels than you have now?

Mr. SMITH. It seems to me we had more range of levels than we have now.

Mr. POWELL. It did come up higher and go down lower than it does to-day?

Mr. SMITH. Yes.

Mr. POWELL. In olden times you think it came up higher and went down lower than it does at the present time?

Mr. SMITH. I have seen it here on Rainy Lake when it was very difficult to navigate.

TESTIMONY OF JOSEPH VALENTINE KEYES, OF INTERNATIONAL FALLS, MINN.

(Joseph Valentine Keyes, being first duly sworn, testified as follows:)

Mr. TAWNEY. Where do you live?

Mr. KEYES. Here in International Falls.

Mr. TAWNEY. Do you own any land on Rainy Lake?

Mr. KEYES. Yes, sir.

Mr. TAWNEY. Where is it located?

Mr. KEYES. There is some at Crystal Bay.

Mr. TAWNEY. Can you give us the description of the land?

Mr. KEYES. That is, I own a half interest in it. Then I own an island. I own part of lot 1, 15 acres, in section 28; the northwest quarter of the southwest quarter, section 27, the southeast quarter of the southeast quarter, section 28, township 71, range 23.

Mr. MAGRATH. You are about 5 miles east of International Falls on the south shore of Rainy Lake?

Mr. KEYES. Yes, sir.

Mr. TAWNEY. Does this land that you are interested in front on the lake?

Mr. KEYES. Part of it does.

Mr. TAWNEY. What is your frontage on the lake?

Mr. KEYES. There is practically 300 feet lake frontage. There are about 50 or 60 acres drowned out. It is natural meadowland.

Mr. TAWNEY. When did you buy this land?

Mr. KEYES. About seven years ago.

Mr. TAWNEY. Did you buy it before the dam was built?

Mr. KEYES. Yes, sir.

Mr. TAWNEY. What was the elevation then above the level of the lake?

Mr. KEYES. We cut some hay there one year. We spent some money there clearing it and got about 20 tons of hay off it, but have never gotten any off it since.

Mr. TAWNEY. What year was that?

Mr. KEYES. It was the first year. I do not know exactly what year; I would have to look it up. It was before the dam was built.

Mr. TAWNEY. You have not been able to cut any since?

Mr. KEYES. You could drown in there now. There is an island there that is supposed to be one island that is two. About 5 acres of that is drowned out.

Mr. TAWNEY. What is the total acreage of your land that is drowned out? I mean the land that you have a half interest in.

Mr. KEYES. About 60 acres.

Mr. TAWNEY. Sixty acres in one tract and 5 acres in the other?

Mr. KEYES. At a 497 level.

Mr. TAWNEY. That is, it is completely covered with water at a level of 497?

Mr. KEYES. It is no good at all for any purpose.

Mr. TAWNEY. You knew of this hearing, did you?

Mr. KEYES. Only what I saw in the newspapers.

Mr. TAWNEY. You knew that it related to the lands on the south shore of Rainy Lake, did you not?

Mr. KEYES. I had an idea it did because it mentioned something about the Lake of the Woods. I went over to see the people in Fort Frances. They were the only people who had any maps and they showed only the Lake of the Woods.

Mr. TAWNEY. They had maps two weeks ago.

Mr. KEYES. They only had a part of them then.

Mr. TAWNEY. What is the value of this land that is overflowed?

Mr. KEYES. I should judge that the natural meadowland ought to be worth \$50 an acre. There was 40 acres sold here adjoining for \$200. This land here [indicating on the map] sold for \$25 for the back acreage.

Mr. TAWNEY. For what purpose is the land intended to be used?

Mr. KEYES. For summer resorts.

Mr. TAWNEY. You estimate this 60 acres of meadowland at \$50 an acre?

Mr. KEYES. Yes, sir.

Mr. TAWNEY. What do you estimate the 5 acres to be worth?

Mr. KEYES. \$35 an acre.

Mr. MAGRATH. Is it all cleared?

Mr. KEYES. No; there is timber on the island.

Mr. TAWNEY. What is the timber on the land worth?

Mr. KEYES. I just got an estimate the other day. I do not know that there is any amount of timber right on the place where it is drowned out. I should judge that is the only ground that is on the island that is fit for cultivation, where it is flooded; the rest is all rock and timber.

Mr. TAWNEY. Read that estimate that you have.

Mr. KEYES. One hundred and fifty thousand feet of Norway and white pine, 10,000 of spruce, and 25,000 of jack pine.

Mr. MAGRATH. What would those trees amount to in timber?

Mr. KEYES. The Norway and white pine is 20 logs to the thousand, the spruce is 27, and the jack pine 25. There is also on the island 600 cords of birch wood. This other piece that is drowned out is natural meadow.

Mr. TAWNEY. Is any of that timber on the 5 acres?

Mr. KEYES. No; I do not think so. The only thing this land would be good for would be summer resorts probably; that is, this island.

Mr. TAWNEY. What is the character of the soil on the 60 acres?

Mr. KEYES. It is natural meadowland.

Mr. TAWNEY. Do you raise wild hay on it?

Mr. KEYES. It will grow blue-joint hay.

Mr. TAWNEY. Your taxes, I see, are \$11.25 on the entire tract?

Mr. KEYES. Well, it is drowned out. It is no good when it is drowned out. That is why it is so cheap. You do not expect a man to pay taxes on land that is under water.

Mr. TAWNEY. I say that that is the tax on the entire tract?

Mr. KEYES. That is half of the taxes—the first half.

Mr. TAWNEY. Then the total tax would be \$22.50?

Mr. KEYES. Yes; on 95 acres.

Mr. WYVELL. Mr. Keyes, you spoke of the 60 acres being drowned out. You mean by that that the entire 60 acres are covered with water at the 497 level?

Mr. KEYES. I am pretty sure they are. That is, they are no good for any purpose.

Mr. WYVELL. Is any additional acreage not actually covered by the water injuriously affected by it?

Mr. KEYES. It naturally would be. It might be just under the ground.

Mr. WYVELL. We would prefer to have you just answer the question directly whether or not any part lying adjacent to the part that is covered by water is injuriously affected by the water.

Mr. KEYES. The rest of the 35 acres is practically tamarack swamp.

Mr. GLYNN. Before this dam was built how much of that land was out of water?

Mr. KEYES. It was practically all out of water when we cut the hay—the first year we had it. They started the dam then. I know there are neighbors of mine up there who are cutting hay every year that haven't cut hardly any since.

Mr. GLENN. Was that land fit for any other kind of crop except hay?

Mr. KEYES. That is the only thing it is good for—that part of it.

Mr. MAGRATH. You say you know land that is flooded with 3 feet of water that at one time you could cut hay on?

Mr. KEYES. Yes. It is surveyed land. It is in that same locality.

Mr. MAGRATH. In what year was it exposed?

Mr. KEYES. It was exposed that same year.

Mr. MAGRATH. You do not know the year?

Mr. KEYES. I do not know exactly.

Mr. POWELL. What is the name of the man who owns the land?

Mr. KEYES. Mr. Erickson is one of them. Another thing I would like to mention is that the water was never so low in this country but what they had navigation between here and Kettle Falls with boats that drew more water than the boats they are running nowadays. They never had any trouble in getting to Kettle Falls on account of low water. The only place was at the rapids here, but they had no trouble in getting through; all they needed was the power.

Mr. ROCKWOOD. What did you pay for those 95 acres?

Mr. KEYES. I bought 15 acres from Mr. Bedell out of that platted addition. One of the forties I bought from the State and the other 40 I bought from Mr. Bedell.

Mr. ROCKWOOD. What did you pay for them?

Mr. KEYES. Seven years ago I bought, and I think it was five and a half or six dollars an acre.

Mr. MAGRATH. For all of it?

Mr. KEYES. No; for the one 40 that was bought from the State we paid \$15 an acre to Mr. Bedell.

Mr. BEDELL. You paid \$150 for the 15 acres.

Mr. KEYES. It was either \$150 for the entire lot or \$15 an acre; but we did some farming on that land before we cut that hay the year before.

Mr. TAWNEY. What did it cost an acre to clear it?

Mr. KEYES. About \$10 an acre.

Mr. TAWNEY. What did you say you paid for the State land?

Mr. KEYES. \$5.50 or \$6 an acre.

Mr. GLENN. You have no suit pending?

Mr. KEYES. No; not yet.

Mr. TAWNEY. Are you raising any crops of any kind on the upland?

Mr. KEYES. No, sir; it is not cleared at the present time.

Mr. ROCKWOOD. Was not the water over the land at or before the time you bought it?

Mr. KEYES. Not at the time we bought it.

Mr. ROCKWOOD. Was it before you bought it?

Mr. KEYES. It might have been before, but it was not at the time we bought it.

Mr. TAWNEY. What time of the year did you buy it?

Mr. KEYES. I couldn't say exactly.

Mr. TAWNEY. Was it in the spring or fall of 1897? That was over seven years ago.

Mr. KEYES. I said it was about seven years ago. It might have been longer than that.

Mr. TAWNEY. Have you got your deed here?

Mr. KEYES. No; I have not. I would like to mention that the 40 adjoining this was sold at \$50 an acre. This platted part was sold, not for summer resort purposes entirely, for \$50 an acre.

Mr. TAWNEY. You say it was not sold entirely for summer resort purposes?

Mr. KEYES. No, sir.

Mr. ROCKWOOD. Was it sold partially for summer resort purposes?

Mr. KEYES. Yes, sir.

Mr. TAWNEY. Have you a house on your land there?

Mr. KEYES. No; I have not.

Mr. POWELL. How much hay would that land grow per acre?

Mr. KEYES. It ought to grow a ton and a half.

Mr. POWELL. What does that blue-joint hay sell for?

Mr. KEYES. Red top sells for \$14 here. Blue joint ought to be as good as that, provided it is not drowned out in the spring or summer.

Mr. TAWNEY. Is this 60-acre tract covered with water now?

Mr. KEYES. Yes, sir. I would like to take you gentlemen up there in a boat and show it to you if you have time enough.

Mr. TAWNEY. We may accept your offer some time. Is there anything further you wish to say to the commission with regard to the value of your land?

Mr. KEYES. No, sir. This land is not surveyed. This is my estimate of it. Will I have the damage estimated at 497 or 500 level?

Mr. TAWNEY. How much more land would be submerged at a 498 level?

Mr. KEYES. At 500 I do not think I would have any at all, not on the 95 acres.

Mr. TAWNEY. As I stated this morning, we are not assessing damages or making awards. We are to report to the two Governments the value of the land that will be submerged at the level we may hereafter determine to recommend to the two Governments.

Mr. KEYES. As I understand, you are going to have another hearing?

Mr. TAWNEY. If we do have another hearing you will have ample time to prepare for it. Is there any other person here that wishes to be heard in respect to his land or on any other branch of the investigation? If not, this session of the commission will be closed.

Mr. KEEFER. I happened to be chatting with the State auditor at the doorway there a few moments ago. He has gone, but if you wish he will file with you a statement of the lands sold this year, last year,

and the year before in these three counties and the average price of the whole in the territory that is affected.

Mr. TAWNEY. I would suggest that the secretaries be requested to write to the auditor and ask him to furnish a certified statement to that effect.

If there is nothing further, gentlemen, this will close the hearing on the investigation at International Falls for the present.

(Thereupon, at 5.30 o'clock p. m., the commission adjourned.)

KENORA, CANADA, *Monday, September 13, 1915.*

The commission, pursuant to public notice, met at Kenora, Canada, on the above-mentioned date at 10 o'clock a. m.

Present: Charles A. Magrath, Obadiah Gardner, Henry A. Powell, James A. Tawney, P. B. Mignault, R. B. Glenn; Lawrence J. Burpee, Whitehead Kluttz, secretaries.

Also, Arthur V. White, of Toronto, and Adolph P. Meyer, of St. Paul, consulting engineers to the commission.

Mr. Magrath presided.

Mr. MAGRATH. Gentlemen, when the International Joint Commission held its meeting here three years ago, the first in Canada, the then chairman of the commission outlined the character of the investigation that had been referred to the commission by the two Governments. In brief, I think I am correct in stating that it was to determine a control of the waters of the Lake of the Woods drainage area that will render the greatest efficiency in the matter of navigation, fishing, power, etc., having due regard to the agricultural and other interests surrounding the lake, as well as the determining of values of certain lands that would be flooded under such control.

The drainage area of the Lake of the Woods and its tributary waters above Kenora comprises some 26,750 square miles. Down through it passes the international boundary for a distance of upward of 300 miles. It is therefore one of the important links of our boundary waters.

When taking hold of this work the ambition of the commission was to deal with it in such a comprehensive way as to make each part of the investigation of such a permanent character that the information collected and tabulated would be valuable for all time. In fact, we concluded, as far as possible, to carry on an investigation upon such scientific lines as would preserve data most useful in furthering international questions that may arise in connection with these waters. We hope to submit our report to the two Governments in the course of a few months, when those interested will be able to see how far we have been successful in attaining our objects. At the meeting held here in September, 1912, it was stated that we would return toward the close of our work in order to give those interested a further opportunity to present any evidence that they wished to submit in connection with the important matters involved.

One of our secretaries, Mr. Kluttz, will now read a copy of the notice which was sent out calling this meeting, after which we will immediately proceed with the hearing.

(Mr. Kluttz then read the notice referred to, which is as follows:)

INTERNATIONAL JOINT COMMISSION,
Ottawa, July 2, 1915.

DEAR SIR: At the hearings held by the International Joint Commission at International Falls, Warroad, and Kenora, in September, 1912, it was announced that, at a later date, when the consulting engineers had completed their surveys in connection with the levels of the Lake of the Woods, the commission would hold further hearings. At the same time it was announced that all interested parties would then be given an opportunity to submit such additional testimony as might be of service to the commission in making its final report to the Governments of the United States and Canada on their joint reference under Article IX of the treaty of January 11, 1909, of certain question concerning the levels of the Lake of the Woods. Included in said reference are the following questions:

"1. In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from that lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, is it practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and, if so, at what level?

"2. If certain stated level is recommended in answer to question 1, and if such level is higher than the normal or natural level of the lake, to what extent, if at all, would the lake, when maintained at such level, overflow the lowlands upon its southern border, or elsewhere on its border, and what is the value of the lands which would be submerged?"

In order that the owners of the land on either border of the lake may have ample time to prepare and be fully heard on the question of the value of their lands that would be submerged at any of the levels indicated on the inclosed maps, and that the fishing, harbor, and navigation interests may also be heard at the same time, you are hereby notified that the commission has fixed upon the following places and dates for that purpose:

At Warroad, beginning September 7, 1915, at 10 o'clock a. m.

At International Falls, beginning September 10, 1915, at 10 o'clock a. m.

At Kenora, beginning September 13, 1915, at 10 o'clock a. m.

All other interests involved in the final conclusions of the commission under the foregoing reference will be given an opportunity to be heard at a time and place hereafter to be fixed by the commission, when the engineering data in relation thereto is available.

For the information of those interested, maps are inclosed showing the results of the surveys carried on under the direction of the commission. On these maps are indicated, by brown-colored lines called contour lines, the areas of land which would be submerged if the level of the lake were maintained at any of the levels indicated by the contour lines as shown on the map.

The contour line 1,060, for instance, represents an elevation of 1,060 feet above mean sea level. The accompanying table will enable you to find the equivalent of the local gauge readings in the elevations shown on the maps. These maps will assist you in placing before the commission evidence as to lands which will be affected at any specified level which the commission may recommend. Additional copies of the above maps may be obtained from the State auditor at St. Paul, from the Hon. Paul Marschalk, at Warroad; from the town clerk, at Warroad; from the town clerk, at Fort Frances; or from the town clerk, at Kenora. Any further information required may be obtained from the secretaries of the commission at Washington, D. C., or Ottawa, Canada.

Very truly yours,

LAWRENCE J. BURPEE, *Secretary.*

Mr. Burpee then stated that copies of the above notice were sent to the following-named interests at Fort Frances:

Lockhart & Co., lumbermen.
Alexander Bruce & Co., tie preservatives.
Fort Frances Lumber Co.
Port Elliot Lumbermen & Contractors.
James Harty, ties and logging.
L. Christie, tie contractor.

George Allen, steamboat proprietor.
 Nelson & Cassidy, contractors.
 Stinson Bros., launches.
 Seine River Lumber Co.
 John Gagnon, launches.

That copies of the notice and maps were sent to the following:

Edward Anderson, K. C., Winnipeg.
 W. H. Beatty, general counsel, Grand Trunk Pacific Railway Co., Montreal.
 Sir Adam Beck, chairman hydroelectric power commission, Toronto.
 A. W. Campbell, deputy minister railways and canals, Ottawa.
 Isaac Campbell, K. C., Winnipeg.
 R. H. Campbell, superintendent of forestry, Ottawa.
 J. B. Challies, superintendent water power branch, Ottawa.
 Hon. J. S. Duff, minister of agriculture, Toronto.
 Hon. G. H. Ferguson, minister of lands, forests, and mines, Toronto.
 Town clerk, Fort Frances.
 George A. Graham, Rainy River Navigation Co., Fort William.
 D. B. Hanna, third vice president, Canadian Northern Railway, Toronto.
 W. A. C. Matheson, manager Lake of Woods Milling Co., Winnipeg.
 J. B. Hunter, deputy minister of public works, Ottawa.
 Alexander Johnston, deputy minister of marine and fisheries, Ottawa.
 Town of Keewatin, the mayor.
 Town clerk, Kenora.
 Lake of Woods Yacht Club, the president, post office box 1071, Winnipeg.
 Hon. F. G. MacdIarmid, minister of public works, Toronto.
 C. S. MacInnes, K. C., Toronto.
 M. H. MacLeod, general manager, Canadian Northern Railway Co., Winnipeg.
 G. G. Ommanney, assistant to the president, Canadian Pacific Railway Co., Montreal.
 Prof. E. E. Prince, commissioner of fisheries, Ottawa.
 Town of Rainy River, the mayor.
 Hon. J. A. Robson, commissioner of public utilities, Winnipeg.
 Henry M. Ruttan, city engineer, Winnipeg.
 D. C. Scott, deputy superintendent general of Indian affairs, Ottawa.
 W. J. Stewart, Ottawa.
 Edwin Tinsley, superintendent of game and fisheries, Toronto.
 James White, commission of conservation, Ottawa.
 City of Winnipeg, the mayor.
 W. G. Chace, chief engineer, Greater Winnipeg water district, Winnipeg.
 The district engineer, department of public works, Port Arthur, Ontario.
 S. H. Reynolds, Esq., chairman, Greater Winnipeg water district, Winnipeg,
 Manitoba.

The following appearances were entered:

Edward Anderson, K. C., Winnipeg, Canada, representing the Dominion of Canada.

Manton M. Wyvell, Washington, D. C., representing the Government of the United States.

Frank H. Keefer, K. C., Port Arthur, Ontario, representing the Province of Ontario in respect to all interests involved.

Hon. Halvor Steenerson, Crookston, Minn., representing the people of the ninth congressional district of Minnesota.

W. J. Stewart, Ottawa, Canada, chief hydrographer for the Dominion of Canada.

J. B. Challies, Ottawa, Canada, superintendent of water power for the Dominion of Canada.

H. G. Acres, Toronto, Canada, representing the hydroelectric power commission of Ontario.

B. H. Fraser, Ottawa, Canada, department of marine and fisheries.

Stuart Scovil, Ottawa, Canada, representing water powers branch, department of the interior, Canada.

F. Y. Harcourt, Ottawa, Canada, representing department of public works of Canada.

Isaac Campbell, K. C., Winnipeg, Canada, representing the city of Winnipeg.

D. H. Laird, Winnipeg, Canada, representing the Winnipeg Electric Railway Co.

J. C. Holden, Winnipeg, Canada, representing the Canadian Pacific Railway.

W. T. Moodie, representing the Canadian Northern Railway.

Allan McLennan, Kenora, Canada, representing the town of Kenora.

C. J. Rockwood, Minneapolis, Minn., representing the Keewatin Power Co. (Ltd.); the Keewatin Lumber Co. (Ltd.); the Ontario & Minnesota Power Co. (Ltd.); the Minnesota & Ontario Power Co. (Ltd.); and the Rainy River Improvement Co.

C. E. Berkman, Chisholm, Minn., representing the landowners on the south shore of the Lake of the Woods.

Mr. MAGRATH. At the hearings just held at Warroad and International Falls we had brief statements from the engineers explaining the data that they have gathered while working under the direction of the commission. We will proceed in the same manner here and will call upon Mr. White first.

STATEMENT OF ARTHUR V. WHITE, OF TORONTO, CANADA, CONSULTING ENGINEER, INTERNATIONAL JOINT COMMISSION.

(Arthur V. White, recalled, made the following statement:)

Mr. WHITE. Mr. Chairman and gentlemen, when the consulting engineers were requested by the commission to undertake their work, the commissioners asked that data, as it was gathered, be put in such form that it could be presented, when printed, to the various interested parties, so that the interested parties themselves would be in a position to have all information that would be basic to the studies which the commissioners have in hand. This has been done, and at present two volumes have been printed, one giving Tables and the other giving Plates. These volumes have been distributed to those who are interested in the data presented.

Before referring to these volumes particularly it will be well to mention that in addition to their hydrographic studies the engineers have made extensive surveys covering, principally, the shore line of the Lake of the Woods. The results of these surveys have been presented on a series of maps, one series consisting of 25 sheets and known as the Lake of the Woods series, upon which it will be found that the surveys cover about 89,000 acres, of which 51,000 are in Canada and 38,000 in the United States.

Along the northerly shore of the lake a reconnaissance examination was made. These results will be presented on three sheets and embrace between 6,500 and 7,000 acres.

In four large areas on Rainy Lake surveys were made. The results are presented on four sheets and comprise about 10,000 acres, and in addition on Rainy Lake a reconnaissance examination was made of isolated areas which total from 2,000 to 3,000 acres.

Surveys were also made above Kettle Falls. These are presented on four sheets, and within the limits of the survey we have some 13,000 acres.

In our report a description of each of these series of maps will be presented, and it seems unnecessary at this time to refer in further detail to this work.

Mr. TAWNEY. Mr. White, I have observed that in none of your statements has there been any reference to the reconnaissance made on the north shore of the Lake of the Woods, or what that reconnaissance showed with respect to whether any lands would be submerged at any of the levels established.

Mr. WHITE. In looking at my notes here I may have overlooked that, but my impression is that I stated that a reconnaissance had been made of the northerly shore of the Lake of the Woods and that some 6,500 or 7,000 acres had been affected.

Making a little further comment on Commissioner Tawney's statement, it might be said that the north shore of the Lake of the Woods has physical characteristics differing quite radically from the southern shore. Along the southerly shore our surveys joined one after the other throughout the whole extent of the shore line, but along the more northerly shore, on account of the more rugged banks, we had to pick out the low areas where they were found to exist.

Mr. TAWNEY. What is the character, generally, of the banks on the north shore of the Lake of the Woods?

Mr. WHITE. They are more abrupt.

Mr. TAWNEY. About how high are they?

Mr. WHITE. They would vary, I suppose one might say, anywhere from 3 or 4 feet to 30 or 40 feet.

Mr. MIGNAULT. I suppose they are pretty much like those we see around here?

Mr. WHITE. The shores are very well represented by what we came through yesterday in our trip from Baudette through the Lake of the Woods to Kenora.

Copies of these maps referred to, except portions of the Kettle Falls survey, are available here for reference at these hearings.

Mr. MIGNAULT. There are certain sections in the Province of Manitoba that are low lying. I refer especially to the region of Falcon River and Rice Bay and Hay River. They are low-lying regions, are they not?

Mr. WHITE. They are.

Mr. MIGNAULT. Are there in Canada any other sections that are also low lying, either in Manitoba or in Ontario?

Mr. WHITE. On the Lake of the Woods?

Mr. MIGNAULT. Yes; on the Lake of the Woods.

Mr. WHITE. Yes, sir; we have referred to these as reconnaissance areas.

Mr. MIGNAULT. When you say the north shore of the lake is generally high, rugged, and rocky, you do not refer to these low-lying districts?

Mr. WHITE. No, sir.

Mr. MIGNAULT. The low-lying districts are very similar to the southerly shore of the lake, are they not?

Mr. WHITE. Yes, sir.

Mr. MIGNAULT. When I say "the low-lying districts," I mean those in Manitoba. They are similar to these?

Mr. WHITE. Yes, sir; and there are also in Canada extensive low-lying areas in the vicinity of Buffalo Bay, Big Island, Bigsby Island, and the Grassy Rivers.

Mr. MIGNAULT. Which are in the Province of Ontario?

Mr. WHITE. Which are in the Province of Ontario, and are shown on the Lake of the Woods series of sheets.

Mr. MIGNAULT. Will you enumerate the low-lying sections in the Province of Ontario?

Mr. WHITE. Beginning at the mouth of Rainy River: McGinnis Creek section, Windy Point section, Little Grassy River section, Big Grassy River section, Bigsby Island section, Big Island—two sections; a portion of the northwest angle section, a portion of Stoney Creek section, and a portion of Buckete Island section.

Mr. MIGNAULT. The sections you have enumerated are represented in maps which have been filed or will be put in the record describing each section?

Mr. WHITE. Yes, sir.

Mr. MIGNAULT. And these sections are very similar in character to the sections which are in the State of Minnesota?

Mr. WHITE. Yes, sir; that is correct. But there are larger portions of certain kinds of areas in the State of Minnesota.

Mr. MIGNAULT. But I refer to the general character.

Mr. WHITE. Representative samples are found in each country.

Mr. POWELL. Your maps show the divisions or classifications of lands and the character of all, do they?

Mr. WHITE. Yes, sir.

Mr. LAIRD. I believe you stated that Buffalo Bay section was in the Province of Ontario.

Mr. WHITE. It is in Manitoba.

Mr. LAIRD. The lands around that bay are very much the same as around the south end of the lake in Minnesota?

Mr. WHITE. In portions that is correct, sir.

Mr. LAIRD. Does not that apply to all the lands around Buffalo Bay?

Mr. WHITE. All the lands around Buffalo Bay are similar to portions of the lands on the south shore, but all the lands on the south shore are not similar to Buffalo Bay.

Mr. MIGNAULT. May I inquire whether the Province of Manitoba is represented here?

Mr. LAIRD. No, Mr. Commissioner, I do not think Manitoba is represented. I might mention that these lands which are in the Province of Manitoba do not belong to the Province; they belong to the Dominion Government. They are administered by the Department of the Interior. The Crown lands belong to the Dominion.

Mr. MIGNAULT. Mr. Anderson, I understand, appears for the Dominion of Canada.

Mr. ANDERSON. Yes, Mr. Commissioner; so that any interest of the Dominion Government will be looked after by me.

Mr. POWELL. Do you intend to offer testimony as to the value of these lands?

Mr. ANDERSON. No; I do not.

Mr. POWELL. Is there anyone present who proposes to offer testimony in respect to the value of these lands in Ontario and Manitoba? If there is not, we will have to depend upon the knowledge we have.

Mr. KEEFER. As far as regards the value of the lands of Ontario, I assume that after what took place at International Falls and Warroad the commission has decided to adopt some scheme or system of their own to arrive at that information. I would like to say that the staff and employees of the Ontario Government are at your disposal. I have one or two of them here, and whenever you desire they can be called before the commission, and they will render you all possible assistance.

Mr. POWELL. My idea was only to get at the scope of to-day's work.

Mr. KEEFER. I thought I would not take up your time until you decided upon your policy.

Mr. TAWNEY. I also desire to state, Mr. Keefer, that the commission has not reached any decision as to how it will ascertain the values. What was said at International Falls was said more especially with reference to the lands that are owned by the State of Minnesota and by private individuals in that State on Rainy Lake. The statement was that the commission would have to adopt some other plan with respect to ascertaining the value of these lands in Minnesota, and if it was deemed necessary or desirable the State and the individuals would have an opportunity to be heard on that question in that State. There was no decision as to the general plan of ascertaining the values at any other place than the one that we were then dealing with.

Mr. ANDERSON. I certainly misunderstood the situation then in that case, because if you will remember when you made that statement with reference to the lands in the State of Minnesota I pointed out that so far as lands in Canada were concerned no evidence had been given, and that I assumed that the same method of ascertaining the damage and values would be followed, to which remark I understood you to assent. I understood that that applied not only to the State of Minnesota and Rainy Lake, but to the situation generally.

Mr. TAWNEY. I have no recollection of assenting to what the procedure would be as to hearings in Canada. I assumed that we would proceed in Canada just as we would in the United States if the parties were ready.

Mr. ANDERSON. Just so; but I mean to say that I understood that the principle you were adopting there would be a general one in so far as it affected any interest which had made any representations as to damages.

Mr. GLENN. We did not adopt any policy there at all; we left it entirely open.

Mr. MIGNAULT. The statement made by Mr. Tawney, who was then presiding, referred simply to the case of Rainy Lake. You will remember, Mr. Anderson, that the point came up in connection with certain representations made by the State of Minnesota and by private parties who were represented by Mr. Samuelson, that they did not understand under the notice given to the people at International Falls that they were to present evidence as to the values at that meeting, but that certainly would not refer to this meeting at Kenora.

Mr. KEEFER. So far as individual owners are concerned here, I have no doubt that any person affected will come before you as the

people did at Warroad. So far as the provincial lands are concerned we would be in the same position as the State of Minnesota; we would have to give you correct data about it. Some of the timber value would have to be proved. I do not know whether or not much of that would be involved, but when you decide what your course or policy will be, we will endeavor to fit in with it and give you all the assistance we can. I might say that it will not be a difficult matter to place a value upon the provincial lands of the Province of Ontario. The majority of them have not been cleared.

MR. ANDERSON. I do not understand that because you happen to be sitting in Kenora or at International Falls, for instance, or any other particular place, that you are only dealing with the interests affecting that place. I understand that you are sitting at places for convenience, and that anybody over the whole area affected could be heard at such places. With all due deference, I feel that a reference to the record may support our interpretation of what took place at International Falls, to this extent anyway: Chairman Tawney said to the Minnesota people who were there, "Now, you have not apparently taken any steps to put your case before us, so far as damages are concerned, and we will have to take some steps ourselves." When you did that it seemed to me it was proper for me to raise the question, and if I did not do it it was not because I did not desire to do it. My intention was to place myself in this position, that if you were going to undertake on your own initiative to ascertain damages and land values in one section you should do it wherever the same condition of affairs existed.

MR. TAWNEY. Mr. Anderson, you will recall the fact that this question arose at International Falls because there was no specific reference in the notice to lands affected on the border of Rainy Lake, and the parties there claimed that they did not know or understand from the notice that they were expected to present evidence as to the value of lands on Rainy Lake. The notice says:

In order that the owners of the land on either border of the lake—

That is, the Lake of the Woods—

may have ample time to prepare and be fully heard on the question of the value of their lands that would be submerged at any time of the levels indicated on the inclosed map, and that the fishing and harbor and navigation interests may also be heard at the same time you are hereby notified that the commission has fixed upon the following places and dates for that purpose.

That is a clear statement. I may, in making the statement orally, have left the impression that the conclusion of the commission as to lands on Rainy Lake would apply to the lands on the Lake of the Woods, but we were dealing only with lands that are not specifically covered by the notice.

MR. POWELL. As I understand the situation over there, we decided that we would do something; yet what we might do we have not decided upon. The matter is still in that unsettled condition—we have to do something, but we have not determined what we will do.

MR. ANDERSON. That being so, I take it that the proceedings before this commission are not in the nature of proceedings before a court in the sense that because a person does not come forward and make his claims he suffers by default.

Mr. MIGNAULT. It would merely place the commission in this position, that they would have to seek elsewhere evidence as to the value of these lands.

Mr. ANDERSON. Just so.

Mr. MIGNAULT. I would add this to what I have just said: These notices were sent to Kenora and different places on the lakes. We were to hold three sittings, one at Warroad, one at International Falls, and one at Kenora. We assumed that at one of these sittings the owners of lands, either the Province or individuals, would be ready with evidence. What occurred at International Falls could not be suggested as any excuse for not being prepared, because under the notice all preparation should have been already made to give evidence as to the value of Canadian lands involved on the shores of the Lake of the Woods. You will remember that at Warroad we had evidence as to the value of lands in the State of Minnesota bordering on the Lake of the Woods, and we fully expected we would have evidence here as to the value of Canadian lands on the shores of the Lake of the Woods. It would be very unfortunate if we did not receive here evidence such as we received at Warroad. It would place us at this disadvantage—we would have to seek information elsewhere.

Mr. POWELL. If the parties do not see fit to come forward and give us that information it will be necessary for us to take our own means of obtaining it and do the best we can.

Mr. MAGRATH. Mr. Burpee, I believe you have a statement there to make?

Mr. BURPEE. A communication was sent by the commissioners to certain settlers on the Winnipeg River with reference to the effect of the levels of the Winnipeg River on their lands. They were notified that the commission would give them an opportunity to be heard at this meeting.

Mr. MAGRATH. Are any of those gentlemen present? As no one has answered, Mr. White, will you please proceed?

Mr. WHITE. Any level or range of levels which may be recommended by the commission, viewed from the physical standpoint, will necessarily be governed largely by the hydrographic records existent for the Lake of the Woods watershed. It has been necessary, therefore, that these records be thoroughly analyzed, and that where discrepancies could be explained that such be cleared up. In the blue-covered book, the volume of Tables, we have presented the existent gauge records, discharge measurements, precipitation, temperature, evaporation, and detailed data relating to the Lake of the Woods watershed.

Mr. MIGNAULT. For the advantage of the record, could you give a more descriptive reference to that book?

Mr. WHITE. I was just going to give one, sir. The title page, you will notice, states that it is a "Report to the International Joint Commission relating to the Official Reference re the Lake of the Woods Levels, submitted by the Consulting Engineers."

In this volume of Tables we have given the early records taken by Mr. James C. Kennedy, of the Keewatin Power Co. Then we furnish also the records from such sources as the United States War Department, the Department of Public Works of Ontario, the Lake

of the Woods Milling Co., the Kenora Municipal Power Plant, the Ontario Hydro-Electric Power Commission, and the Manitoba Hydrographic Survey, as well as records taken by Mr. William Lyon and Mr. George Drewry and others. In order to make these records usable, inasmuch as they were taken on different gauges and to different datums, it was necessary to decide upon a common datum to which all these records could be reduced. On plates Nos. 16 and 17 will be found represented the results of the correlation of various datums of the Lake of the Woods gauges. Just in a word, these datums were correlated by stationing observers at different points on the Lake of the Woods, at Oak Point, Warroad, and Kenora, and having the gauges read at short intervals during a period of several days.

MR. POWELL. Then you took the mean of each?

MR. WHITE. Yes, sir; and the results have been given in detail in our report. By way of illustration, suppose one had the reading at Warroad to-day and wished to know what the reading would be, neglecting wind effect, on the gauge at Keewatin. He would add 93.5 feet to the Warroad reading. The datum which we adopted was the United States Coast and Geodetic Survey 1912 adjustment, sea-level datum. Suppose one had the gauge reading at Keewatin and wished to know what it was in terms of this sea-level datum. He would to-day add 961.07, or to the Warroad reading he would add 1,053.58.

MR. POWELL. Three or four years ago, Mr. White, when we were at Warroad, we discovered that the frost had thrown up the abutments on which the gauge was situated. Have your adjustments straightened that out?

MR. WHITE. Yes, sir.

MR. POWELL. So that is eliminated now as a factor in the problem?

MR. WHITE. Yes, sir; and whenever such adjustments have been made, a record or explanation is given in the report. On page 77 of the book of Tables for May 1, 1913, you will find a heading "local datum" and then three readings—"above dam" 98.25, "lake" 99.85, and "tail-water" 79.00. Those are the actual readings which appear in the records of the Public Works Department of Ontario. In the next three columns, under "sea-level datum," you have each of these figures, respectively, expressed in terms of sea-level datum—1,059.85, 1,060.92, and 1,039.33. Looking under the "local datum" at "tail-water," it is evident that the tail-water level after May 1 begins to rise. In the early part of July, 1913, a better illustration will be found, where opposite July 7 you find a small index number 2, and in the footnote at the bottom of the page it is seen that 58 stop logs were put in the dam from the 7th to the 9th, thus holding the water in the lake and causing the tail-water to drop.

Turning now to page 95, before July 1, 1908, we have the readings at Warroad taken at 8 a. m. and 5 p. m. We have the mean for the day and this mean expressed in terms of sea-level datum. All the records which we have had available have been dealt with in this manner so that it is possible to have any gauge reading, not only as it is originally recorded, but also as it is expressed in terms of sea-level datum.

In plate No. 11 of the volume of Plates we have summarized certain meteorological records. From this plate it will be seen that

from about 1885 to about 1889 a period of low water had set in, beginning prior to 1885, and we know that no correspondingly long period of low precipitation has occurred since. If a regulation of the Lake of the Woods is to be made, it is essential that some accurate knowledge be had regarding what quantity of water may be expected to come from the watershed as the result of precipitation upon it. The only way that such prediction can be made is through an understanding of the manner in which the waters have been discharged from the watershed in previous years. From this plate No. 11 we find that if we were only considering the period from about 1891 or 1892 to date, we would not have found in that period conditions as extreme as those which had existed before.

Mr. TAWNEY. Each one of these squares on plate No. 11, I take it, represents 2 inches?

Mr. WHITE. Yes, sir; up and down, and crossways the year is represented.

Mr. MIGNAULT. What are the figures in the left-hand margin, Mr. White?

Mr. WHITE. The figures in the left-hand margin are inches.

It will not be necessary at Kenora to give any description of the local geography. Old Fort Island, Tunnel Island, Portage Bay, and such places are well known and are shown on plate No. 19. Here you will find a map showing the location of the various channels and outlets from the Lake of the Woods. The only features to which I will draw attention, specifically, are the small dotted lines running across this map at different places, which indicate localities at which cross sections of the lake outlets were taken with the object of determining how these various cross sections affect the discharge from the lake.

Mr. MIGNAULT. These cross sections are all indicated by numbers?

Mr. WHITE. These cross sections are indicated by the numbers, and if you turn to plate No. 29 you will find section 12, being that at approximately the site of the old rollerway dam. Sections appear in the report corresponding respectively to the various numbers.

Mr. MIGNAULT. These cross sections, Mr. White, are referred to on the key map of the outlets of the Lake of the Woods. Plate No. 29 indicates section 12 on the key map, which is plate 19. I just wished to get that in the record so it may be understood. That is true also of all these cross-section plates; they refer by number to a corresponding number on the key map of the outlets.

Mr. WHITE. They do. Turning now to plate 25; in our Report we have presented maps to a larger scale on the various outlets, and on plate 25 you will notice this same section No. 12 near the bottom portion of the map.

Mr. MIGNAULT. Please make that clear, Mr. White. I notice on plate 25 a dotted line marked "12." Does that refer to the cross section 12 indicated on plate No. 29?

Mr. WHITE. Yes, sir.

Mr. MIGNAULT. The cross sections indicated on plate 19 and on plate 25 are the same?

Mr. WHITE. Yes, sir.

Mr. MIGNAULT. In each case the numeral, or figure, indicates the cross section?

Mr. WHITE. Respectively; yes, sir. After we had the various gauge records analyzed and had obtained all explanatory data that

could be secured, we platted on cross-section paper the various records for the purpose of study. The only way in which we could begin to get ahead with our work was to arrive at an agreement respecting what interpretation was to be put upon these various records.

On plate 39 you will find records taken during a portion of 1892 and 1893 by Mr. James C. Kennedy, of the Keewatin Power Co. There is practically no difficulty about deciding upon the mean line for records of this character. You will notice that the line follows very closely the records as they are individually platted. But if you turn now to plate 45 you will find the records of levels of the Lake of the Woods for 1904 and 1905. Observe how they spread about on the sheet. These records [pointing to certain records] are correct ones. These records [pointing to other records] differed by about 2 feet or more, all purporting to represent the record of the stage of the Lake of the Woods. What was the stage of the Lake of the Woods on days when the records were so apparently discrepant? The consulting engineers in an instance of that kind would have to come to some agreement respecting what the levels of the lake were during that year, and what is being said with regard to this plate applies to others as well.

By the way, the records taken by some of the citizens, like Mr. Drewry, were of very great assistance to us. Even though the records were isolated, they were frequently confirmatory of conclusions which we were led to arrive at by other means. I would draw attention to one record here. Here are records of the Department of Public Works of Ontario running along day after day for several days without any variation; but there were, also, records taken by the Lake of the Woods Milling Co. and others on some of those days which clearly reflected such changes in the lake stage as would be suggested by a study of cognate meteorological and other data. Such records [pointing to the chart], therefore, running along continuously day after day for a number of days, could not be accepted.

Now, what were the engineers to do unless they could obtain some supplemental information to assist in determining what the mean line should be? On March 11, 1904, by way of illustration, we have a record of one of the United States engineers who was sent to Warroad to make an instrumental determination of the lake stage for a special purpose. That record was found, and, knowing how the lake was behaving in other years during November and December, we were able reasonably to conclude that the lake was behaving, here, in a somewhat similar manner.

Mr. MIGNAULT. Was it your practice, Mr. White, to establish a mean between the records at Norman and the observations taken at Warroad? I see that on March 18 or 19 there are certain observations at Norman made by the Lake of the Woods Milling Co. There was a discrepancy of more than 2 feet. Perhaps you might explain that, and explain also why you adopted a mean between these two observations on the same date.

Mr. WHITE. Unless we had wind conditions of which we had knowledge, we would not proceed in that manner. We gave the weight to the observation of the engineers, which was specific. While the line happened to fall about midway between the Public

Works Department's records and the Lake of the Woods Milling Co.'s records, it is here a coincident.

Mr. MIGNAULT. Is the level at Warroad substantially the same as the level at the outlets of the Lake of the Woods? I am referring to the level of the lake.

Mr. WHITE. Substantially the same. There is a small varying drop through Devils Gap, but it is a small quantity.

Mr. MIGNAULT. Substantially, the level of the lake throughout is the same?

Mr. WHITE. It is. As this matter of the derivation of the mean line is basic to every hydrographic conclusion which we make with regard to the Lake of the Woods levels, it will be profitable to make this further explanatory comment: Throughout 1904 and 1905 the Warroad records have been followed consistently, checked by the Public-Works records from September 11 to 17, 1905, the latter part of October, and all of December, 1905. The Warroad records also agree with the records furnished by the Ontario Hydro-Electric Power Commission between October 4, 1905, and May 18, 1906.

The mean lake-level line adopted for the winter of 1904 and 1905 is based, primarily, upon the January 11 reading at Warroad and the mill "A" forebay records. The William Lyon records also agree with the line of mean lake levels adopted.

The instrumental checks of the Warroad gauge on March 11, 1904, and December 16, 1905, at practically the beginning and end of the two years in question, add confidence in the reliability of the Warroad records for this period. Moreover, Lemay was gauge reader at Keewatin during 1904 and up to April, 1905. During the summer of 1905 the dock at Norman is said to have been in an unstable condition, and except for readings in September and October (which are assumed to have been taken by Hansen from his mark) the records of lake levels are unreliable until December, 1905, at which time the gauge was being read at the Keewatin Bridge, presumably having been transferred during November of that year.

This is just a representative sample of the mode of analysis pursued and by which we support the line which has been adopted. Mr. Powell referred to a shift at the Warroad gauge by frost. Such a matter would be reckoned with. Corresponding statements might be made of a number of gauge readings on both sides of the line.

Mr. MIGNAULT. Kindly explain the discrepancy between the readings at Warroad at the beginning of July, 1905, which amount to several inches.

Mr. WHITE. It will be necessary to point that out on the graph. You will notice here that the Public-Works records drop down, while the Warroad records go up. That is wind effect. In a case like that, where we would see such a pronounced indication with respect to either set of records, we would take the mean line between them.

I believe I am correct, Mr. Meyer, in stating that the mean level line on all the records which we have had to deal with has been decided with respect to the evidence which we could obtain and without any disagreement whatever.

Mr. MEYER. Yes; it has.

Mr. WHITE. Moreover, we feel assurance that this mean line, with the explanations given in our Report, will commend itself to the

other engineers who have to consider the same problem. I will hurry on, passing over material which can be studied by individuals who are interested. All the gauge records which we have had are published in the book of Tables and also presented in the graphs and have been treated in the manner just explained. In addition to these gauge records we had the measurements of discharge through the various outlets, more particularly those obtained by the assistance of the Manitoba Hydrographic Survey of the Department of the Interior in Ottawa. With these gauge heights and the records of discharge, and with the studies of the cross sections at the outlet before referred to, it has been possible to deduce the discharge from the Lake of the Woods before any control was exercised at the outlets. With the knowledge of these discharges, paying due respect to exercise of control at International Falls, it has been possible to deduce what the levels of the Lake of the Woods would have been without control being exercised. Nearly all of the considerations relating to Lake of the Woods discharge have been based upon what is known as the Keewatin River gauge.

Mr. MIGNAULT. Where is it located?

Mr. WHITE. It is at the Keewatin River bridge, which is marked on plate No. 19. The portion of the Winnipeg River in which this gauge is located is subject to fluctuation on account of influences other than those of the actual discharge through the various outlets. For instance, at week ends, on Sundays, when some of the plants shut down, the levels in this pool, on account of the control sections constituting the outlets of the pool, do not fall to as low stages as would correspond to the fluctuations in discharge occasioned by the shutting down of the mills. Studies relating to problems of this kind respecting the effect on the pool in which the Keewatin River gauge is located are represented on plates 72 to 75, inclusive.

The object in drawing attention to these plates is to indicate that matters of this kind, which might suggest the possibility of criticism on the part of engineers, have not been overlooked, but have been carefully dealt with and explained in the Report.

Turning now to plate 113 and plate 114 and the following ones, you will find presented the results of our computations for the level of the Lake of the Woods in a state of nature. As time is running on I will just refer to these briefly. The object of plate 113 is to show that even though there be actually an error in the selection of the particular level existent at the time from which we begin our computations for natural levels, nevertheless, in the period of from six to eight months, or at most a year, any such errors become eliminated.

Mr. MIGNAULT. Will you kindly explain the meaning of the different lines on plate 113?

Mr. WHITE. The top curve on plate 113 gives the actual levels of the Lake of the Woods as also shown on plate 39. The three dotted lines give the computed natural level, making assumptions, respectively, that at the beginning of October, 1892, the lake stage was 1,057, 1,059.5, or 1,060.8.

Turning to plate 125, there are summarized the results of the levels and outflow under natural conditions, and also under conditions which actually maintained. The period to which these graphs apply consists of 252 months from 1893 to 1913. Reference to these graphs will

show, for example, that for 50 per cent of the time, the computed natural level would be at stage about 1,056.7, while the actual level for the same per cent of time was about 1,059.8.

It will be noticed that under natural conditions the Lake of the Woods fell to about a stage of 1,053, while under actually controlled conditions it did not fall below a stage of 1,056.5. It will also be seen that during this particular period the natural level, as computed, would not have risen much above 1,061, while the actual level did rise to about 1,062.3.

Reference to the tables will show that for the period which we have here under consideration, namely, 1893 to 1913, the actual level under control, and also the computed natural level during this period did not rise quite as high as the level of the Lake of the Woods did under natural conditions for a longer period. I have in mind the lichen marks on the rocks—the marks cut by Mr. James C. Kennedy—indicating what he regarded to be the high-water marks at the time that he had his records cut in the rocks. Somewhat corresponding remarks could be made with reference to the curve showing the actual outflow and the computed natural outflow, but as considerable time has been taken in covering the comments already made, and as the matters are all covered in detail in the printed report of Text, which will be out shortly, Mr. Meyer might take up now the other phase of the work.

Mr. MAGRATH. I would like to intimate that these more or less brief statements that are made to us by the engineers at the different points where we have had hearings are for the purpose of giving those present some explanation of the engineering data now available before they commence giving their evidence.

STATEMENT OF ADOLPH F. MEYER—Recalled.

Mr. A. F. MEYER (recalled). Mr. Chairman and gentlemen, in considering the extent to which regulation of the levels and the outflow of the Lake of the Woods is feasible it is necessary to consider not only the regulation of outflow, of course, but also the regulation of inflow. A little over 50 per cent—actually 54.2 per cent—of the total drainage area tributary to the Lake of the Woods is tributary to Rainy Lake above the outlet at Fort Frances and International Falls. But, more than that, 62 per cent of the total amount of water that is available here at the outlet comes from that portion of the drainage area above International Falls and Fort Frances. The inflow into Rainy Lake is regulated by nature on account of the large number of lakes existing on that watershed. The inflow into Lake of the Woods is regulated by means of the outflow and regulation at the outlet of Rainy Lake; but there are large areas that are tributary to the Lake of the Woods, particularly those areas tributary to the Rainy River below International Falls and Fort Frances and above the mouth of the river at its entrance into the Lake of the Woods, that can never be subjected to any material control. There are large areas of forest on that watershed, but the effect of the forest in equalizing stream flow is far less than the effect of lakes; consequently a large portion of the inflow into the Lake of the Woods has most always remained unregulated.

That has an important bearing on the extent to which it is feasible and desirable to attempt to regulate the outflow from Rainy Lake, and it has a bearing upon the amount of storage which it is practical to provide above International Falls and Fort Frances for the primary purpose of regulating inflow into the Lake of the Woods. If additional storage over and above 100,000,000,000 cubic feet is practical and desirable above International Falls and Fort Frances, the provision of that storage must find its justification in the use to which the water flowing from these secondary storage reservoirs can be put, or in reduced fluctuations in the levels of Rainy Lake itself. From our studies, to which I will refer in a little more detail later, it does not appear practicable and desirable, it does not appear economical, to provide for more than about 100,000,000,000 cubic feet of storage capacity on the upper Rainy watershed. That amount of storage capacity can be secured by a fluctuation of about 7 feet in level on Rainy Lake, and about 11 feet in level on the lakes above Kettle Falls, or it can be secured by a less fluctuation on these lakes and by a secondary storage on some of the smaller lakes on the upper Rainy watershed. In carrying out those studies, we have prepared, first of all, mass curves of inflow into Rainy Lake, presented on plate 127 and plate 128, mass curves of inflow, showing the outflow from Rainy Lake, the regulation, first of all, under method A, with the object of securing the maximum increase in the extremely low water flow, which extends over a period of several years—that is the low water flow, such as may be expected once in 25 or 30 years. Unfortunately, our records do not extend back to 1885; so that even in this study, which covers the extreme low-water period of 1910, 1911, 1912, 1913, and parts of 1914, we have not been able to cover what is probably the extreme low-water period for these waters, as indicated by the meteorological data, to which my associate, Mr. White, has referred.

In the case of method B, the aim is not to increase the extremely low water flow that occurs only once in 25 or 30 years or more, but to aim to equalize the flow during each year; you might say, annual equalization of flow, as opposed to periodical or continuous equalization of flow. In the case of method A, inasmuch as we are never able to foretell exactly when that extreme dry period is going to occur, it is necessary to keep the reservoir at a higher level than in the case of method B. It is usually necessary to fill the reservoir during the spring run-off, and at the close of that period of heavy run-off not to release the water at a more rapid rate than it could be released over a period of several years, in case this were the beginning of that extremely dry spell. The result is that the limiting rate of outflow is determined by the flow that can be maintained over a period of extreme dry years. In the case of Rainy Lake we have assumed that both 100,000,000,000 and 150,000,000,000 cubic feet of total storage capacity were available, and we find that the addition of 50,000,000,000 cubic feet of total storage capacity on the upper Rainy watershed will result in making available only about 247 cubic feet per second of additional water, which is less than 3 per cent of the average discharge which could have been utilized during the last twenty-odd years, with 100,000,000,000 cubic feet of storage capacity. It appears, then, that that additional increase in

storage would not increase the amount of water which could be utilized very materially.

Mr. TAWNEY. What have you to say with reference to the cost of securing that additional 50,000,000,000 cubic feet?

Mr. MEYER. The cost of securing that additional storage capacity would, on the face of it, be quite out of proportion to the increase in stream flow which would be utilized as a result of that increased storage, and, so far as the Lake of the Woods is concerned, the effect would be still less, the exact amount depending upon the method of regulation which would be adopted in the case of the Lake of the Woods. In the case of method A very much more water is wasted than in the case of method B. In fact, our studies indicate that at the outlet of Rainy Lake, for example, if the outflow were regulated under method B, there would have been practically 2,000 more continuous horsepower available than if the outflow had been regulated according to method A, on the basis of an installation capability of using 10,000 cubic feet per second, which is practically the average discharge over this entire period of years. Method B would have permitted the utilization of about 90 per cent of all of the water flowing from that watershed. We have extended our studies of the effect of these different methods of regulation and of the provision of these two different amounts of storage capacities on the upper Rainy watershed to the utilization of the waters flowing from the Lake of the Woods, and these studies are presented in the mass curves on plates 132, 133, 135, and 136. In the case of the first two studies it was assumed that both Rainy Lake and the Lake of the Woods would be regulated according to method A; that is, aiming to equalize the flow over a long period of years.

By a glance at these plates—and this matter is brought out further in the report by tables—we note that the increase in regulated outflow per foot increase in draft on storage on the Lake of the Woods is very much greater in the case where the draft on the storage—that is, the range between high and low level on the lake—is 3, 4, and 5 feet than in the case where this draft is 6 or 7 feet. That is, the increase in the regulated outflow is very much greater per foot increase in depth of storage up to 5 feet than it is for greater drafts on storage, such as 6 or 7 feet; that is, for greater fluctuation in levels such as 6 or 7 feet. In the case of method B the advantage of the lower draft is not so apparent. In fact, the amount of water which could be utilized advantageously is not determined primarily by the maximum draft on storage; but the increase, again, is relatively smaller for the lower rates of draft than the higher, although there is not that difference that existed in the case of regulation according to method A. Plates 134 and 135 indicate that for either one hundred or one hundred and fifty billion cubic feet of total storage capacity and regulation by method B very little water would need to be wasted at the outlets of the lake or on the Winnipeg River below. The shaded areas indicate the water that is wasted. These studies are then summarized in frequency curves, such as that on plate 136, which plate gives frequency curves of feet draft on storage for various methods of regulation, and the curves on plate 137 give frequency curves showing the outflow from the Lake of the Woods resulting from these two methods A and B of regulation, with a maximum draft of 5 feet.

Now, it is well to have in mind that if you are going to have uniform levels you must have, accordingly, varying outflow, and if you are going to have a uniform rate of outflow you must have variations in levels. The two things are diametrically opposed, and you can not have both. If the fluctuation in levels is limited to 5 feet, for example, and no reserve storage which can be used in the case of extraordinary rainfall on the watershed is provided, it would have been necessary, according to this plate 137, to have provided an outflow capacity of 75,000 cubic feet per second in case both the upper Rainy Reservoir and the Lake of the Woods had been regulated according to method A; whereas if they had been regulated according to method B an outflow capacity of 57,000 cubic feet per second would have been provided as against a natural maximum of about 36,000 cubic feet per second, under a condition of greater fluctuation in levels—that is, the fluctuations in a state of nature were greater than 5 feet—therefore the maximum rate of outflow was less. Whenever there is a rapid run-off from the watershed tributary to this lake, and tributary to any other lake, for that matter, nature stores part of that run-off on the lake and lets part of it go through the outlets. That is the reason why the rates of outflow under natural conditions are less than those under a condition of control, unless under this condition of control the fluctuation in level is made greater, and reserve storage is always provided. In fact, on account of the large drainage area directly tributary to the Lake of the Woods, which can never be put under control, it appears quite necessary to provide some reserve storage. In the first place, you can expect several inches of rainfall over the lake and other portions of the tributary watershed in a very short time, which alone would raise the lake level several inches.

So that, in order to provide for these large rates of inflow, it appears necessary to provide some reserve storage which shall not be drawn upon except under these exceptional conditions, and that when a heavy rate of inflow occurs the outflow capacity—that is, the controlling works at the outlet—be open, so as to provide a certain predetermined outflow capacity, such as, for example, 40,000 cubic feet per second. Assuming that the maximum outflow capacity, including in that the capacity of the turbines, is provided, it would have been necessary to have utilized about eight-tenths of a foot of reserved storage in order to have absorbed the maximum rates of run-off which would have occurred, or which did occur during the past twenty-odd years. We have, then, made a study of the effect of the different methods of regulation on the water powers at the outlet and also those on the Winnipeg River below, but at the present time we are not going into this matter in any detail, because that is to be taken up, as I understand, at hearings to be held later. But I just want to call attention to some of the more fundamental principles which I believe it is necessary to have in mind in considering this matter of regulation, even from the viewpoint of navigation and riparian ownership. I will not go into the discussion in detail in plates 138 and 139, which indicate some of the results that can be secured by different methods of regulation and with different maximum levels. I want to call attention, however, to the fact that the present outflow capacity is relatively small—that is, compared

with what I have indicated a minute ago would be required in case the range of levels were to be limited to certain figures, with a certain reserve storage provided, which was to be utilized only once in, say, 25 or 30 years. On plate 140 we have shown the relation between controlled outflow stage and fall on the western outlet. Reference to that plate indicates that for a level such as prevails at the present time, for example, it would require in the neighborhood of 8 feet of fall between the lake and the Norman dam in order to pass 25,000 cubic feet per second. In order to regulate the outflow from this lake, then, it is necessary to provide additional outflow capacity. We are not going into the details to-day as to how that shall be secured, but just to indicate that in order to regulate, in accordance with the principles laid down a few minutes ago, it would be necessary to provide additional outflow capacity.

Mr. POWELL. I suppose that simply means this: There are occasions on which you have to reduce the water rapidly, in order to keep it in the river?

Mr. MEYER. The inflow is so great that, in order to prevent the level from rising above the maximum you have set, it is necessary to get rid of the water rapidly. On plates 141 and 142 are summarized data which were gathered for us by the Manitoba hydrographic survey with reference to boathouses and docks in the vicinity of Kenora and Keewatin. These curves indicate the elevation of the top of the dock and of the top of the boathouse floors, and also the depth of water at the inshore end of the boathouse and at the outer end. We note that all the docks—that is, the top of the docks—are above elevation 1,061, and that 90 per cent of the boathouses have floors above the elevation of 1,061, but that about half the boathouse floors are above 1,062 and about half of them below 1,062.

Mr. TAWNEY. About half of them below 1,062 but above 1061?

Mr. MEYER. No; out of the total number, 90 per cent are above 1,061, and about 50 per cent are above 1,062, and 40 per cent of the total number between 61 and 62, 10 per cent being below 61.

Mr. TAWNEY. Ten per cent below 61?

Mr. MEYER. Yes.

Mr. TAWNEY. Do you state how much they are below 1,061? I do not wish you to read it, but I want to know if you state it.

Mr. MEYER. Yes. We give the total number and also their value. There is not a very great difference between the distribution based on number and the distribution based on value, except in a few instances where a dock of a very considerable value has a given elevation. It throws the curve a little one way or the other, but the distribution is not radically different. All told, these curves cover boathouses which were valued at \$185,000 and docks valued at about \$35,000, just to give you an idea of the investment which was covered by that portion of the investigation, and I believe there were about 175 boat-houses covered and 80 docks.

If there are no questions, that is all I have to say.

Mr. WHITE. You use the word "covered." That might suggest covering by water.

Mr. MEYER. No; I meant that were covered by examination.

Mr. STEENERSON. This reasoning at the foundation of your remarks looks to the saving of all the water possible for power purposes?

Mr. MEYER. It is one of the factors worthy of consideration, because, according to the reference, we are to consider the most advantageous use to which the waters of the Lake of the Woods, and those flowing into and from that lake, could be put for the various purposes—

Mr. STEENERSON. You are not considering the other uses in this line of reasoning, are you?

Mr. MEYER. I would prefer to have it specified as to which line of reasoning you have reference.

Mr. STEENERSON. I understood that, in explaining the plates, you were assuming how the maximum amount of water could be used with the least waste at certain levels.

Mr. MEYER. I was assuming how, by different methods of regulation, different amounts of water would become available for power purposes, confining my remarks, of course, at that time to the use of the water for power purposes.

Mr. STEENERSON. And this method whereby the variation in level is the last. You spoke of two methods, one of which would produce a greater variation than the other, if I understood you?

Mr. MEYER. They were both predicated upon the same variation in level.

Mr. STEENERSON. The least variation, as I understood you, would produce in the long run the greatest amount of power. There would be the least waste in that case.

Mr. MEYER. I do not think there is any statement of record to that effect.

Mr. STEENERSON. Well, how is it?

Mr. MEYER. The greater the variation in level the greater the equalization of flow that can be effected, and therefore the greater amount of water which can be utilized for power purposes.

Mr. STEENERSON. Then it is just the opposite of what I assumed in my question—that the greater the variation in the lake levels the higher the results in power?

Mr. MEYER. Did you refer to the utilization of power only at the outlets or on the Winnipeg River below, or in both places?

Mr. STEENERSON. The Lake of the Woods.

Mr. MEYER. We are concerned in this study with the utilization of the waters flowing from the lake, and in this study we refer specifically to the powers at the outlets, and also to the powers on the Winnipeg River below.

Mr. STEENERSON. Will you answer my question as to which of those?

(Question read to Mr. Meyer.)

Mr. MEYER. So far as the interests on the river below—

Mr. STEENERSON. That is, the Winnipeg River?

Mr. MEYER. The Winnipeg River; that holds without qualification.

Mr. STEENERSON. The higher the variation in the lake level the more power you would get?

Mr. MEYER. The higher the variation in level the greater the equalization of outflow which can be effected, and therefore the greater the power available for any given head.

Mr. STEENERSON. That applies to the Winnipeg River below the outlet?

Mr. MEYER. Yes.

Mr. STEENERSON. How is it at the outlet—the first dam?

Mr. MEYER. A question of that kind really involves about an hour's discussion. It is handled very fully in the report and is covered quite fully by plate 138, and in general, I would say that the greater the variation in level irrespective of restriction as to low and high level the greater the amount of power which would be available at the outlets.

Mr. STEENERSON. How would it be above in the other water power which you spoke of? How is that related to the variation in level?

Mr. MEYER. Which powers have you in mind?

Mr. STEENERSON. You said that there were other powers besides the Lake of the Woods.

Mr. MEYER. The powers on the Winnipeg River below, and I presume you probably refer to powers on the Rainy River.

Mr. STEENERSON. Yes.

Mr. MEYER. The range in level, when we are not restricted as to what the high and low level shall be, has no material bearing on the development of power at the Long Sault Rapids, for example. Developments there are concerned primarily with restrictions as to high and low level, rather than with range of level. I think that is probably what you have in mind.

Mr. STEENERSON. If I understand it, then, the water power interests at that point would not be concerned with any restrictions that might be placed on the high or low level?

Mr. MEYER. That is not it at all. My reply was that they were not concerned with range in levels, but were intimately concerned with restrictions as to high and low level.

Mr. STEENERSON. Then they would be affected by restrictions as to level?

Mr. MEYER. That is, if the level on the Lake of the Woods were high, it would back water up at the foot of the rapids, which constitutes daily water for any plant which may be installed at the rapids, and, therefore, the high level of the Lake of the Woods would mean a higher daily water level and less fall at the Long Sault.

Mr. STEENERSON. And less fall at the Long Sault?

Mr. MEYER. Yes.

Mr. STEENERSON. Would it affect it up Rainy River, above the Long Sault?

Mr. MEYER. No; there would be no effect whatever at International Falls.

Mr. STEENERSON. Would not the amount of outflow there affect the Lake of the Woods level?

Mr. MEYER. That is an entirely different question.

Mr. STEENERSON. The amount of power that is produced at International Falls would be dependent upon the amount of water that goes through, and, therefore, if there were a restriction on the lake level which would limit the discharge of water it might affect their power there?

Mr. MEYER. The lake levels, or the levels of the Lake of the Woods, do not in any way restrict the outflow from the turbines at International Falls.

Mr. STEENERSON. No; but if the lake was to be kept within certain bounds that would affect the amount of water that might be permitted to be let through. The amount of water that passes through International Falls would affect the lake level, would it not?

Mr. MEYERS. I have indicated that we have made studies of the effect of various systems of regulation of the outflow from Rainy Lake on the regulation of the levels and the outflow from the Lake of the Woods, and have indicated that, over and above a certain amount of regulation, the control here depends primarily upon the inflow from the local drainage area; that is, the area tributary to the Lake of the Woods proper and tributary to the Rainy River below the outlet of Rainy Lake.

Mr. STEENERSON. International Falls is below the outlet of Rainy Lake.

Mr. MEYER. When the power plant is controlling the outlet from Rainy Lake to International Falls and Fort Frances, it is the effective outlet from Rainy Lake.

Mr. STEENERSON. And their use of the water there would have an effect upon the lake level below?

Mr. MEYER. Exactly. I have indicated in the studies that we have made as to the effect—

Mr. STEENERSON. You will excuse me, but I did not understand your former answer that the use of the water would not affect it, or something of that kind—that it would not be affected. Did you mean that the level of the lake below did not affect it up above?

Mr. MEYER. If you will ask a specific question, I will reply to a specific question; that is the only way—

Mr. STEENERSON. The idea that you expressed a moment ago to the effect that the power at International Falls was not affected by the Lake of the Woods would be understood to mean that the higher level of the Lake of the Woods could not affect the amount of power at International Falls?

Mr. MEYER. It would not; that is, within reasonable limits—not a range of 30 or 40 feet.

Mr. STEENERSON. Of course that is understood, but the amount of water used passing through the dam at International Falls would affect the level of the Lake of the Woods?

Mr. MEYER. The manner in which it is permitted to flow from the lake does affect the levels of the Lake of the Woods.

Mr. STEENERSON. And if that were restricted, then it might affect the amount of power to be used at International Falls?

Mr. MEYER. Oh, very decidedly. If a system of regulation were prescribed of a certain kind, it might reduce very considerably the amount of power available at International Falls and Fort Frances.

Mr. STEENERSON. I understood you, in your direct statement, to speak about providing a certain amount of storage in reservoirs for a very dry season, extreme drought, like what might happen once in 25 years. Do you recollect that part?

Mr. MEYER. Yes; I made some statement of that kind.

Mr. STEENERSON. How much would it be necessary to raise the level? I think you mentioned the amount of lake level or the amount

of rise in the lake level in order to provide against such an extreme drought. I think you mentioned a certain number of inches.

Mr. MEYER. I mentioned certain results that would be secured by methods of regulation and with certain total amounts of storage capacity on the upper Rainy watershed and also on the Lake of the Woods itself.

Mr. STEENERSON. Did I not understand you correctly, then, when you said that the maintenance of the lake at a level of some 6 or 8 inches would provide against an extreme year of drought, such as might happen in 25 years?

Mr. MEYER. No such statement on record, I believe.

Mr. STEENERSON. What did you say about providing for that year of extreme drought? Could you not repeat it from memory?

Mr. MEYER. As near as I can recollect, I stated that, as shown on plates 132 and 133, drafts of 3, 4, and 5 feet on the storage on the Lake of the Woods would result in a much greater increase in the regulated outflow than the higher drafts of 6 and 7 feet produced.

Mr. STEENERSON. And is that all you stated with reference to that year of extreme drought?

Mr. MEYER. I do not think it was. If you would indicate——

Mr. STEENERSON. You seem to have omitted what I had in mind.

Mr. MEYER. Indicate just what it is you are trying to get, and I will answer it just as fully and frankly as it is in my ability to answer.

Mr. STEENERSON. I understood you to say in your statement that it would be necessary to make provision against a year of extreme drought such as would happen once in 25 years.

Mr. MEYER. I indicated that there were two methods of regulation that were fundamentally different and produced radically different results. One method of regulation was that which aimed to increase the outflow over a longer period of years and keep it above this one maximum; that is, every effort was made to keep the reservoir so that it would be full at the beginning of an extreme dry period of years such as we have here from 1910, extending away into 1915, and probably 1916, according to these studies, and that the other method was that which did not aim to increase the outflow over this long period of years, but attempted to increase the ordinary low-water flow as it occurred through the seasons of the year; that is annual equalization, primarily, that the reservoir would be filled in the spring, and then, as the inflow became less during the summer, the storage would be drawn upon and the level reduced gradually, reaching its minimum in the spring of the year, when the inflow again increased, without any effort to hold over storage for 15, 20, or 30 years to use when that dry period came; and we discussed the results that would be secured from these two radically different methods of regulation.

Mr. STEENERSON. I am obliged to you; I begin to see the light, but I have not yet heard the difference in level that would be obtained by these different results.

Mr. MEYER. I believe I stated in answer to a similar question a little while ago that we indicate the results that would be secured by these two methods of regulation for the same fluctuation in lake level; that is, we have picked out in this case a maximum range under

ordinary conditions not to exceed 5 feet, with a provision of a certain amount of reserve storage to be used only under exceptional circumstances.

Mr. STEENERSON. I am sorry that I am unable to give the quotation without a transcript, but I recollect distinctly that in your direct statement you referred to a certain amount of storage for these extremely dry years, so that it would require a few inches—

Mr. MEYER. How much?

Mr. STEENERSON. A few inches—I do not know that you said in feet—but a certain amount of inches higher to provide against this extreme year of drought.

Mr. MEYER. Do any of the engineers remember it?

Mr. WHITE. A little reserve storage for extreme precipitation occurring over a few days.

Mr. MEYER. I spoke of precipitation over the lake and watershed resulting in a rise of probably 3 or 4 or 5 or 6 inches, and that in connection with that there would also be high rates of inflow from the upper tributaries and that those would require a reserve storage of eight-tenths of a foot if an outflow capacity of 40,000 cubic feet per second were provided at the ordinary maximum high stage, and then the controlling works to be kept open and the water permitted to flow from the lake as rapidly as it could through those outlets; that even under those conditions the lake would gradually rise about eight-tenths of a foot and then come back again to its ordinary maximum probably once in 25 years.

Mr. STEENERSON. Would it not be possible to state whether this method of providing for an extreme drouth would require a higher or lower level than the other method?

Mr. MEYER. It has no relation whatever to the stage in the lake so far as our studies are concerned.

Mr. STEENERSON. Nor to variations?

Mr. MEYER. And we have specified distinctly a variation under which certain results would be secured, and this was a maximum draft on storage or the maximum range in level under ordinary conditions of 5 feet, with a provision of eight-tenths of a foot of reserve storage capacity.

Mr. STEENERSON. Well, there is where I got it, eight-tenths-foot storage capacity. I have been searching for that remark for a long time and I have at last discovered it. Explain that eight-tenths storage capacity in your own words because I can not fully grasp it.

Mr. MEYER. I will restate it once more; I have just restated it.

Mr. STEENERSON. You mix it up with so many other things I can not understand it.

Mr. MEYER. This reserve storage capacity was to be used only in cases of exceptionally heavy rains on the watershed, rains which might raise the lake level directly—that is, as the result of rainfall on the surface—by two or three or four inches in the course of a few days and that, in addition to that, there would be heavy inflow from all the small tributaries around the lake, from the Little Fork and the Big Fork and the Rapid River and all the other tributaries below the outlet of Rainy Lake, and there would be heavy inflow from Rainy Lake itself; and that, in order to absorb that heavy inflow without increasing the outflow to such a very high quantity, it

might be necessary and desirable to provide about eight-tenths of a foot of reserve storage as a minimum; that if the outlets here were provided with controlling works when the ordinary maximum level which may be recommended and may be established was reached these controlling works could pass 40,000 cubic feet of water per second; that then the lake still would rise about eight-tenths of a foot above that ordinary maximum level in order to take care of this high inflow, on the basis of the past 20 years of record, and that may or may not be the extreme that may occur in the next 25 or 30 years; it may even be exceeded slightly.

Mr. STEENERSON. For what length of time would that eight-tenths-foot higher water surface prevail, according to these calculations?

Mr. MEYER. I have not the total figures here, but I believe that that extreme maximum would be reached and the lake would recede again in the course of three or four weeks, approximately, for our present purposes. It is all a matter of record in our computations.

Mr. STEENERSON. And that would be annually; or only once in 25 years?

Mr. MEYER. Only once in 25 years; it might not even be that.

Mr. STEENERSON. How is that?

Mr. MEYER. It might not be even once in 25 years. It might be once in 30 or 40 years when a condition of such high precipitation and runoff would occur. All our conclusions must be based, of course, on such data as are available for the past 20-odd years. No man can say whether that period of years covers both the extreme maximum and the extreme minimum conditions that we have to take care of.

Mr. STEENERSON. The object of this storage, eight-tenths of a foot extra, would be to conserve so much more water power, would it? Otherwise, you would let it run off?

Mr. MEYER. It would require the expenditure of very considerable sums of money just to produce that outflow capacity, and that outflow capacity would be very much greater—may be twice as great—as the outflow capacity under natural conditions.

Mr. STEENERSON. I do not understand that the providing of an outflow capacity is as expensive as building a dam and constructing a flow. From this, I should infer that the reverse was true.

Mr. MEYER. Of course, if you walk along these shores and examine the outlets, and see the rock ridges there are, and are called upon to cut a channel through there that will carry 20,000 cubic feet per second, I am sure you will agree it would be a very considerable expenditure of money.

Mr. STEENERSON. As I understand it, then, this provision for eight-tenths additional storage capacity would be in the interest of more water power?

Mr. MEYER. It is simply an attempt to do, to a limited extent, exactly what nature does on a larger scale.

Mr. STEENERSON. That is not answering the question. Would it make more water power available, or less, to provide this eight-tenths additional storage capacity for those extreme years?

Mr. MEYER. That depends some upon the conditions at the tail-races of the various plants which may hereafter be constructed, but, on the whole, I would say it would provide or make more additional water power available.

Mr. STEENERSON. That would be the object of it, or would the object be to save expense in providing for a tail-race or spillway?

Mr. MEYER. The object would be, in a large way, to permit the advantageous utilization of the waters, and that is for both power and navigation purposes. Now, navigation on the river below here is dependent, in a large measure, upon the rates of outflow, and those high rates of outflow would no doubt, under present conditions, absolutely prevent any navigation of the river below.

Mr. STEENERSON. The high rate of outflow?

Mr. MEYER. Yes.

Mr. STEENERSON. There is plenty of depth of channel there?

Mr. MEYER. On account of the rapids, that would be created particularly at the Dalles, the higher the outflow, the greater the fall and the swifter the current at the Dalles on the Winnipeg River below.

Mr. STEENERSON. There is no lack of depth when the water is low; or when there is no rapids?

Mr. MEYER. There is no lack of depth of water.

Mr. STEENERSON. Now, this additional power, or the greater raise of the water for power by means of the eight-tenths foot storage, would only be of use once in these many years, when there happened to be an extreme drouth?

Mr. MEYER. It would occur only once in 20 or 25 years.

Mr. TAWNEY. It is also for the purpose, is it not, of regulating the level of the Lake of the Woods?

Mr. MEYER. It is one of those things that it is necessary to do from a practical point of view, to control the level, on account of the high rates of inflow into the Lake of the Woods.

Mr. STEENERSON. That additional power could be secured in that extreme year by coal or other fuel, I suppose?

Mr. MEYER. It could.

Mr. STEENERSON. And do you think it economically wise to make this provision for one dry year in 25, at the expense of having this eight-tenths foot higher level?

Mr. MEYER. I consider it a practical method of regulating the level in order to secure the most advantageous use of the waters of the Lake of the Woods and of those flowing into and from that lake and of the use of the shores and the harbors of the lake.

Mr. STEENERSON. I believe Joseph only saved up 7 years of grain for the 7 years of drought, but you save up 25 years of water by raising this level for the risk of 1 year's drouth.

Mr. MEYER. We do not save it up, but we try to get rid of it just as rapidly as we can for practical purposes.

Mr. TAWNEY. You are assuming this eight-tenths foot higher level is every year. That is not what the witness said.

Mr. STEENERSON. I have not stated what he said. I said it occurred every year.

Mr. MEYER. My statement was that that occurs once in 25 years or 30 years—this additional eight-tenths—and it might not occur again for a long time.

Mr. WYVELL. And you mean that in the other 24 years when that peculiar phenomena did not result the water would not rise any

higher than if such additional storage was not provided for; is that correct?

Mr. MEYER. Yes; the ordinary maximum level would prevail for 24 years, and in the twenty-fifth year, when the extraordinary condition occurred, the lake would be permitted to rise a few tenths of a foot—it might be four or five tenths or six or eight tenths.

Mr. STEENERSON. I understand that is what it was before you had any works. In extraordinarily wet years the lake went higher?

Mr. MEYER. That is exactly the way nature does regulate lake levels, and we are trying to improve upon that regulation in some slight manner. The best we can do will be only a limited improvement.

Mr. WHITE. Some misunderstanding may have arisen in the use of the term "storage." This reserve storage of eight-tenths of a foot, if one might so express it, is empty space that is provided to receive exceptional run-off once in 25 years. It is not eight-tenths of a foot of water that is held over for 24 years, to be used once in 25 years.

Mr. STEENERSON. I am very much obliged for this explanation. The witness has been unable or unwilling to explain it. That is the first time I have heard it explained.

Mr. WYVELL. Merely as providing an illustration on the record of the effect of the present control of channel, I wish to call your attention to one particular item. You have said that the year 1913 was what is called a dry year, have you not?

Mr. MEYER. I have referred to the year 1913 as being within the period of dry years, which began in 1910, approximately July, and which extended for the higher rates of draft—that is, for different methods of regulation and equalization of flow—into 1915, and probably may extend into 1916; that is, that under a certain method of regulation the run-off was not large enough during those years to replenish the draft on storage that was required during the years 1910, 1911, and 1912.

Mr. WYVELL. By run-off you mean the run-off into lakes?

Mr. MEYER. Yes.

Mr. WYVELL. We might term that in another way inflow.

Mr. MEYER. Yes.

Mr. WYVELL. On the 9th September, 1913, the Warroad Commercial Club, through its president, sent a telegram to the Secretary of War, as follows:

Lake of the Woods flooding land on the American side on account of dam at Kenora, Ontario; can be lowered by Canadian authorities removing stop logs in the dam; would ask you to take immediate action to prevent extensive damage here.

Now, from your record, Table 70—

Mr. TAWNEY. At that point, let me add, at the same time that telegram was sent to the War Department it was also sent to myself as chairman of the International Joint Commission, the same telegram. The matter was taken up with the chairman on the Canadian side immediately, and through the efforts of the Canadian chairman, Mr. Casgrain, 138 stop logs were removed within 48 hours.

Mr. WYVELL. Yes; I appreciate that.

Mr. TAWNEY. And 10 days after the removal of the stop logs, as the result of the activity of the commission, the commission received, by reference from the State Department, the telegram you have just read.

Mr. WYVELL. Not the original telegram, but a copy.

Mr. TAWNEY. Yes; a copy.

Mr. WYVELL. I am not putting this in the record as the least sign of complaint from the United States; far from it; but merely for the purpose of showing as good an illustration as I can find, from such study of the bluebook as I have been able to make, of the rise of the lake caused by restricted outflow and with some sudden inflow, and I think I can develop that in a very few moments and with a very few questions. It is merely for the purpose of bringing out this illustration, which, I think, may be of some service. Now, referring to Table 70, page 239, of the volume of tables, the average of the first 10 days of April, 1913, was the sum of 6,457 cubic feet per second. Is that not correct?

Mr. MEYER. That was the average.

Mr. WYVELL. Do you know whether or not all that water was being utilized that was being let go down? If you do not know, it is not very material.

Mr. MEYER. No; I do not think all of it was being utilized.

Mr. WYVELL. Now, the inflow during that same period, referring to Table 73 for the 10 days' average, was the sum of 6,457. Page 248 of the volume of tables.

Mr. MEYER. I do not see it.

Mr. WYVELL. Perhaps I have the wrong column?

Mr. MEYER. Twelve thousand two hundred and seven cubic feet.

Mr. WYVELL. Yes; the amount of inflow was 12,207 feet, and the balance was going to storage?

Mr. MEYER. Yes.

Mr. WYVELL. The amount for the month of April, 1913, taking the monthly average for that month, we have an outflow of 8,600 feet on an average (p. 239)?

Mr. MEYER. Yes.

Mr. STEENERSON. Look at that carefully. My copy does not give that. It gives 12,000.

Mr. MEYER. The monthly mean was 8,600; the average for the last 10 days was 12,000 and odd.

Mr. WYVELL. We are talking about the average for the month, 8,600?

Mr. MEYER. That is correct.

Mr. WYVELL. You do not take the monthly mean on page 73, do you?

Mr. MEYER. No; not in that table.

Mr. WYVELL. The monthly mean is not given?

Mr. MEYER. No; it would be a matter of seventeen or eighteen thousand.

Mr. WYVELL. So that the balance was going to storage, of course?

Mr. MEYER. Yes.

Mr. WYVELL. And that was the cause of the rise of the lake in May, 1913?

Mr. MEYER. The excess inflow over outflow.

Mr. WYVELL. And the large inflow began during the latter part of April?

Mr. MEYER. Yes.

Mr. WYVELL. Or from the 11th to the 30th?

Mr. MEYER. Yes.

Mr. MIGNAULT. I suppose the records of precipitation would correspond with those figures, or would they?

Mr. MEYER. They would not contradict them in any way. Of course, there is no direct comparison between the precipitation—that is the run-off resulting from winter precipitation.

Mr. MIGNAULT. It is quite a usual condition in that time of year—in April?

Mr. MEYER. Yes; a greater rate of inflow than outflow; it is the normal condition.

Mr. BERKMAN. As a matter of fact, however, what was being stored during the period referred to by Mr. Wyvell was not at that time utilized over the Norman Dam?

Mr. MEYER. Some of that water was being utilized when the inflow became less than the outflow, later in the year.

Mr. BERKMAN. It was not utilized over the Norman Dam?

Mr. MEYER. There has been water going to waste at the Norman Dam continually, and at times, when some of the sluices are open, the water is being wasted there. There is no power development at the Norman Dam.

Mr. KEEFER. What level does it reach in May and June? If I have it right, it is 1,061?

Mr. WYVELL. Plate 124 will show that the month of May was substantially 1,061.

Mr. MEYER. Yes. Plate 49 shows it more in detail.

Mr. ANDERSON. What effect has the regulation of outflow at the head of the lake into the Winnipeg River on navigation below?

Mr. MEYER. In a general way the higher the rate of outflow the more fall at the Dalles and the swifter current at the Dalles. Consequently, high rates of outflow are not as desirable for navigation on that portion of the river. There may be other points below—that is farther down on the Winnipeg River—where there are shoals where higher rates of outflow—that is where any ordinary rates of outflow might be more desirable. I am not familiar enough with the subject of navigation over any other regions of the Winnipeg River, to be able to make a statement as to that.

Mr. ANDERSON. What do you mean by the Dalles? Is it rapids?

Mr. MEYER. The sketch map of the Winnipeg River, plate 20, shows the location of the Dalles. It is a narrow channel, rather deep, amply deep, so far as all ordinary stages are concerned, because the ultimate control is at White Dog Rapids, a number of miles farther down stream, but in high water the flow of water goes farther up the Dalles, with an increased outflow and swifter current at that point.

Mr. ANDERSON. It admits any amount of inflow there?

Mr. MEYER. Yes.

Mr. ANDERSON. And there would have to be an extreme outflow as compared with the present outflow, that would interfere seriously with navigation?

Mr. MEYER. Yes. A discharge of 16,000 cubic feet per second would not interfere with navigation, as far as my knowledge goes.

Mr. ANDERSON. Would there be any condition of outflow that might be an improvement upon navigation there?

Mr. MEYER. I presume a very small outflow, reducing the fall very materially in the Dalles, would result in the most satisfactory navigation at the Dalles.

Mr. KEEFER. Sixteen thousand cubic feet per second; would that benefit or injure navigation provided it was required?

Mr. MEYER. There is a rather uniform increase in fall at that point, and it is difficult to make a dividing line. I think a captain who runs the rapids would say that above a certain point it becomes difficult to navigate them.

Mr. KEEFER. But, as a general principle, a uniform flow, a regulated flow below the dam, would be better for navigation?

Mr. MEYER. I would say almost any flow below an average flow is equally good.

Mr. KEEFER. You mean regulated?

Mr. MEYER. Yes.

Mr. KEEFER. What would you say as to 10,000 cubic feet per second as the regulated flow at the dam?

Mr. MEYER. With respect to what?

Mr. KEEFER. With respect to navigation below the falls.

Mr. MEYER. I would consider that would permit of satisfactory navigation at the Dalles, but, as indicated before, this matter of navigation at the Dalles is only related, in a more or less general way, to our other problems, and we have not made any very detailed study of that. We have not very much evidence bearing on that matter of navigation at that point.

Mr. GARDNER. Is there any substantial navigation on that river at that point?

Mr. MEYER. Not a great deal, to my knowledge.

Mr. GARDNER. Do you know what the character of that which does exist is?

Mr. MEYER. So far as I know, for pleasure, and perhaps very small packet freight.

Mr. KEEFER. Was it not used a great deal in the construction of the Grand Trunk Pacific—I mean opening up the construction of the Grand Trunk Pacific? Would it not be used a good deal then?

Mr. MEYER. I do not feel qualified to speak of that. Perhaps Mr. White could speak with more authority on that.

AFTER RECESS.

KEENORA, CANADA, *Monday September 13, 1915.*

The commission reassembled at the expiration of the recess, all the members being present, Mr. Magrath presiding.

Mr. MAGRATH. Gentlemen, the notice which was sent out by the secretaries and which was read this morning indicates the order in which the questions will be dealt with. We will first take up the flooded areas, and then the fishing, harbor, and navigation interests. I think it is desirable that we should take them up in that order.

I will call upon Mr. Anderson as representing the Dominion Government to make any statement he desires to in reference to the Government lands in Canada.

Mr. ANDERSON. Before touching upon that point I want to ask Mr. Meyer one question arising out of a matter I spoke to him about this morning. I am instructed that the question of navigation in the Winnipeg River below the lake is of some importance, and I just want to ask one further question about the regulated outflow. I understand in one aspect of it, Mr. Meyer, that if there were a very great increase in the outflow it might injuriously affect navigation.

Mr. MEYER. Yes, sir; that is correct.

Mr. ANDERSON. On the other hand, do I correctly understand that a limited increase in the outflow over and above the natural outflow might improve navigation? For instance, I am told that there are times when under natural conditions the water would be too low at the Dalles, at the point you spoke of, to navigate. Now, if there were a steady outflow, that would assist that, would it not?

Mr. MEYER. There would be times under natural conditions when the outflow from the lake, if unregulated, would have been very small, and there are also other points. One point that I failed to mention this morning which has been given consideration in our report is the point right below the outlets. The channel was improved by excavation for navigation purposes opposite Old Fort Island, which is just below the outlet. A very low flow there would provide insufficient depth, so that an extreme low flow would also be objectionable, and under natural conditions that might have dropped down to a very low quantity, because according to our volume of tables the local drainage area at times does not even provide enough water to compensate for evaporation from the lake surface.

Mr. ANDERSON. Before answering the question that you asked me, Mr. Chairman, there is another suggestion that I wish to make to the commission. It arises to a certain extent out of the question with reference to the lands belonging to the Dominion Government which may be affected by a rise in the levels. My suggestion is this: As there are lands belonging to the Dominion Government, to the Federal Government of the United States, and to the State of Minnesota, it would probably be policy upon the part of the commission—at any rate, it is for the commission to determine that—to make a request upon their respective Governments that, pending settlement of this question, no further disposition should be made of Federal, State, or Crown lands. I might say that that point occurred to me some little time ago, and, as far as the Government of Canada is concerned, I did make that request to them, and I believe that they have decided that in the meantime no sales or transactions or entries would be permitted of Dominion Government lands until the question is settled. I spoke to Mr. Wyvell about this matter before adjournment, and I understood that he agreed with me.

Mr. WYVELL. I said that I would carry the suggestion to the Interior Department. Of course I can not say just what the Interior Department will do.

Mr. STEENERSON. Did I understand the suggestion was that the two Governments would withdraw these lands from entry?

Mr. ANDERSON. The suggestion was that the commission should, if they thought it a proper thing to do, make that request of the respective Governments.

Mr. STEENERSON. I do not believe that the Interior Department has any such power. It would require an act of Congress. The United States is under treaty obligations to the Chippewa Indians to dispose of these lands and turn the money over.

Mr. TAWNEY. It would require legislation on our side of the line.

Mr. STEENERSON. I would like to ask Mr. Meyer some questions. In these studies relative to the development of the use of the waters coming through the Lake of the Woods for water power have you estimated the relative amount of power to be produced at the outlet as compared with the amount to be utilized or produced by the flow of the river below the immediate outlet of the Lake of the Woods?

Mr. MEYER. The regulated flow would, of course, so far as it comes from the Lake of the Woods, be the same at these different plants; and assuming only the outflow from the Lake of the Woods, the power would be in approximate direct proportion to the head at these various sites. The head at the outlets will depend upon the lake level and the method of regulation. The head at the other plants is not quite so much dependent upon the method of regulation and not at all upon the lake level. The heads compare approximately in the ratio of, say, on an average, depending again upon the lake level to be established for the Lake of the Woods of 18 to 20 feet at the outlets and about 290 feet in the Winnipeg River below.

Mr. STEENERSON. So that the water power developed below is of greater importance than at the immediate outlet in that estimated proportion.

Mr. MEYER. Very much more power would be developed; yes, sir.

Mr. STEENERSON. Have you estimated the number of horsepower produced at the outlet by the raising of the level? How many horsepower would be produced by raising it 1 foot, for instance?

Mr. MEYER. If the outflow is utilized so far as possible according to method B, there would be about 1,250 horsepower for every foot of head at the outlets.

Mr. STEENERSON. If there are 18 feet of head, then it would be eighteen times 1,250 horsepower.

Mr. MEYER. That is correct, under the method of regulation "B."

Mr. STEENERSON. Have you any idea as to the value per horsepower?

Mr. LAIRD. Mr. Chairman, the notice pointed out related purely to the hearing for these other interests. Now, the time of the people here is being consumed by these questions relating to power. The time is awfully short in which to present the other interests, and I must object to this question being gone into.

Mr. MAGRATH. I was just waiting, Mr. Laird, to see what he was going to develop. If it is going to involve the question of power development, we can not take it up now.

Mr. STEENERSON. I will ask no further questions, except on this one point. Mr. Meyer, have you any idea about the value per horsepower?

Mr. MEYER. That depends very largely upon the uses to which the power is put, whether it will be utilized at the site or whether it will be transmitted a considerable distance, and whether it will be utilized continuously through 24 hours or utilized at a varying rate, reaching a maximum shortly after sunset. It depends, of course, upon the cost of producing power by other means, such as by a steam plant or with oil engines; so that that is a very variable quantity.

Mr. STEENERSON. You could not give any range above and below, approximately?

Mr. MEYER. That is, as to the value of a horsepower?

Mr. STEENERSON. Yes; of the power here at the outlet.

Mr. MEYER. In a general way, the cost of producing power from water here as compared with producing it from coal, I should say, would not be less than \$25 or \$30 a horsepower per year less, depending on a great many factors.

Mr. STEENERSON. You would not expect to sell it at that rate, would you?

Mr. MEYER. I understood it was worth very much less.

Mr. STEENERSON. At this point, Mr. Chairman, I desire to move to strike out all the evidence and all the matter in these different studies in the engineering reports with reference to the production of power below the outlet, because, as I understand this treaty, this commission has nothing whatever to do with power developed below the outlet of the Lake of the Woods in the Winnipeg River. It is expressly excluded. Just for a convenient reference, I will read the preliminary article:

For the purposes of this treaty boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.

Further reference to the subsequent articles, and especially to Article IV, shows that the high contracting parties in making this agreement contemplated only such obstructions to flowing water as would affect the level of boundary waters. The Winnipeg River below the outlet is not a boundary water at all. The calculations of Mr. Meyer and the other engineer with relation to raising the upper waters of the Rainy River 7 and 11 feet, respectively, in order to produce a constant flow, not to produce water power at the outlet of the boundary water, but to produce water power below where the level of the Lake of the Woods can have no effect whatever, except that you let a quantity of water flow through there—but this commission is limited and the treaty is limited to the level in boundary waters and not to the level of waters into which boundary waters may flow. When they speak of this magnificent water power down here and propose to use the boundary waters as a reservoir, they go entirely beyond the ideas of this contract between these Governments. They put the cart before the horse. They are then using the boundary waters as a reservoir to supply private water-power interests in a river exclusively within the jurisdiction of one Government and after it has left the boundary waters, according to all the definitions contained in this treaty.

Mr. POWELL. Mr. Steenerson, do you not think you are anticipating? Will not your motion be proper when we come to make up our decision?

Mr. TAWNEY. I think he had better argue it now.

Mr. STEENERSON. Your honor, the evidence, if admitted without objection or notice, might be taken on the part of the United States to be a sort of mixing up of another issue, and for that reason I want to preserve our rights. Of course, I understand that the commission will take into consideration the question of admitting it subject to objection.

Mr. POWELL. De facto it is admitted without objection at the present stage; it is all in.

Mr. STEENERSON. I think it can be reached by this motion. That is what the motion was made for.

Mr. GLENN. I think it could very easily be made at the other sitting when we take up the matter of power interests.

Mr. STEENERSON. We intend to take up the matter there, but I thought this was a proper time to make the motion, and the commission, if they have any doubt about it, can take it under advisement.

Mr. POWELL. It is a question of arguing it twice, because this matter will all come up again when the power interests are taken up.

Mr. MIGNAULT. Is your motion in writing, Mr. Steenerson?

Mr. STEENERSON. No; but I can reduce it to writing. I would be very glad to do that.

Mr. TAWNEY. Mr. Steenerson, you state that it is beyond the power of the commission to consider anything in respect to the utilization of the waters of the Lake of the Woods after leaving that lake, or after they have been discharged from the outlet of the lake into Winnipeg River?

Mr. STEENERSON. They are not then in boundary waters.

Mr. TAWNEY. That is the basis upon which you put it. I would like to ask you what answer you would make to this proposition: This whole question has been referred to this commission for investigation, not for final determination, and the reference was submitted under Article IX, which reads as follows:

The high contracting parties further agree that any other questions or matters of difference arising between them involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, shall be referred from time to time to the International Joint Commission for examination and report, whenever either the Government of the United States or the Government of the Dominion of Canada shall request that such questions or matters of difference be so referred.

The International Joint Commission is authorized in each case so referred to examine into and report upon the facts and circumstances of the particular questions and matters referred, together with such conclusions and recommendations as may be appropriate, subject, however, to any restrictions or exceptions which may be imposed with respect thereto by the terms of the reference.

Such reports of the commission shall not be regarded as decisions of the questions or matters so submitted, either on the facts or the law, and shall in no way have the character of an arbitral award.

Then the article goes on and says how the report shall be made. It does not relate to boundary waters at all, but relates to and expressly provides for the investigation of differences arising between the high contracting parties involving the rights, obligations, or

interests of either in relation to the other or to the inhabitants of the other, whether in boundary waters or in the interior of either country it matters not. They have agreed to refer matters of difference of that kind to the commission for investigation and report with its conclusions, and under that authority the two Governments agreed upon this reference, which reads as follows:

In order to secure the most advantageous use of the waters of the Lake of the Woods and of the waters flowing into and from the lake on each side of the boundary for domestic and sanitary purposes, for navigation and transportation purposes, and for fishing purposes, and for power and irrigation purposes, and also in order to secure the most advantageous use of the shores and harbors of the lake and of the waters flowing into and from the lake, it is practicable and desirable to maintain the surface of the lake during the different seasons of the year at a certain stated level; and if so, at what level?

Now, the purpose of this reference is to ascertain how we can secure the most advantageous use of the waters of the Lake of the Woods and the waters flowing into and out of the lake. We are not restricted under that reference; in fact, it is the duty of the commission to ascertain the most advantageous use and how the most advantageous use can be secured, and to report merely. This is an investigation. It is not for the purpose of determining the questions that may be adduced, but it is for the purpose of enabling the two Governments themselves hereafter to determine these questions. As long as the work of the commission is confined to the subject matter of the reference, how is it possible or competent for any interest to come in and claim that evidence relating to the subject matter of the reference is not competent or should not be considered or should be stricken out? Inasmuch as the reference is made under the authority of the treaty, and the commission has confined itself to the subject matter of the reference for purposes merely of investigation, I do not see how it is possible for the commission to consider the question of striking out any evidence or not considering any evidence that is offered as long as it relates to the subject matter of the investigation.

Mr. STEENERSON. Of course, in answering that I would respectfully suggest that the commissioner has decided the question that I raised before hearing the argument.

Mr. TAWNEY. I am asking for your views.

Mr. STEENERSON. I will state the contention. The contention is—

Mr. POWELL. This matter has got to come up again, Mr. Chairman.

Mr. STEENERSON. I think I ought to state it. I can state my contention in a very few minutes.

Mr. POWELL. These few minutes become very elongated.

Mr. STEENERSON. I think it is important.

Mr. POWELL. So it is, and the proper time to hear it is not now.

Mr. STEENERSON. The answer to that statement is this, that you are not proceeding under Article IX. The reference was not made under Article IX.

Mr. TAWNEY. It so states in the reference.

Mr. POWELL. That is the only article under which a reference could be made to us.

Mr. STEENERSON. The substance of this reference relates to the boundary waters. It is the use of these waters that are designated boundary waters and Section IX must be read in harmony with the other provisions of the treaty. This is not a difference with reference

to the use of waters outside of the boundary waters; it is a difference with reference to the use of boundary waters. It is a controversy that is limited to the boundary waters which are alone within the jurisdiction of this commission. That is my answer. I regret that I have taken up time. I shall try and avoid it hereafter.

Mr. TAWNEY. I do not think it is time that has been wasted at all. I neglected to read the first part of the reference which is as follows:

I have the honor to inform you that at the joint request of the Government of the United States and of the Government of the Dominion of Canada, under the provisions of Article IX of the treaty of January 11, 1909, etc.

The reference is made specifically under Article IX.

Mr. POWELL. In addition to that, it is the only power for referring questions to us.

Mr. STEENERSON. But that does not mean that the reference is as broad as Article IX. The reference is here to boundary waters by authority of Article IX and the other articles.

Mr. TAWNEY. Article IX is so broad as to refer to everything.

Mr. POWELL. Boundary waters are not referred to at all in Article IX. There is no mention made in any way of the expression and no indication of it. It is confined entirely to those matters which we are called upon to adjudicate.

Mr. TAWNEY. The article states that any other questions or matters of difference arising between the high contracting parties involving the rights, obligations, or interests of either in relation to the other, or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, shall be referred to the International Joint Commission. Matters are referred to in Articles III, IV, and VIII. If you will read Article X you will notice that it is still broader, and states that with the consent of the Senate of the United States and the Governor General in Council on this side any question of difference can be referred to the commission, even questions involving national honor or vital interest.

Mr. POWELL. Mr. Steenerson, if your objection were on this score, that it does not refer to matters along the lines that are not particularly near the boundary line or that are too far removed, you might make an argument.

Mr. CAMPBELL. I would submit that the Gulf of St. Lawrence fisheries questions could be referred to the commission.

Mr. STEENERSON. I would add to the other objection the ground indicated by Mr. Powell, that water-power development in the river below the outlet is too remote for the consideration of this commission in determining the level of the Lake of the Woods.

Mr. ALLAN McLENNAN. Mr. Chairman, at this point I would like to make a suggestion to the commission. The outlets of the Lake of the Woods unquestionably are an important point in your considerations of this investigation. At the time of the sittings of your commission here in 1912 I think the members visited these outlets. The statements and evidence that came before the commission are easily and readily understood. There are some members on the commission to-day who were not members at that time, and, perhaps more particularly for that reason, it might be desirable that the commission view the several outlets and the dams that are in question. If

they should think it desirable, I might say to you, on behalf of the town, that you will be taken care of at any time you desire. I might suggest that you could adjourn this afternoon at an early hour, or at any time that you may think advisable, and I should be glad to have you visit them.

Mr. MAGRATH. The commission appreciates the offer of the town of Kenora in that respect, and it is our intention to look over the property again.

Mr. ANDERSON. Mr. Chairman, I have not any evidence to offer with reference to the lands which may be affected by any proposed levels.

Mr. MAGRATH. Mr. Keefer, have you any evidence to offer?

Mr. KEEFER. No, Mr. Chairman, not at this present time.

Mr. MAGRATH. Mr. McLennan, has the town of Kenora any evidence to offer in connection with the flooding of lands in this neighborhood?

Mr. McLENNAN. They have no evidence.

Mr. BERKMAN. I would like to ask the representative of the Dominion Government if he knows or can show how much of the lands have been homesteaded or are in private hands along the borders that are affected by the high waters. I know that there are homesteads in the Little Grassy and the Big Grassy River districts that are being flooded by the high stages of water, and if it is known how many settlers, or possibly how many acres would be affected, we would like to get that information.

Mr. ANDERSON. It is a very simple matter for Mr. Berkman, if he is interested in that question, to get that information. It is a matter of record in the interior department at Ottawa, and he can get such information by making application there.

Mr. BERKMAN. It is not a matter of interest to me so far as I represent the interests of those settlers, but it might be in behalf of the representatives of the Dominion Government.

Mr. TAWNEY. Are you addressing the commission, Mr. Berkman, or counsel for the Dominion Government?

Mr. BERKMAN. The commission.

Mr. MAGRATH. Mr. Anderson says that he has not the information you ask for, Mr. Berkman. Are there any other parties present who have any evidence to offer in connection with the flooding of lands? Are there any interested parties representing the boat interests that are concerned about these levels?

Mr. ANDERSON. Do you mean navigation, Mr. Chairman?

Mr. MAGRATH. No; boathouses, docks, etc.

Mr. ANDERSON. The Dominion Government is, of course, interested in the matter of docks and harbors. We have not any representation to make as to them. We will at some stage of the proceedings make known to the commission what the official views of the Government are with respect to the maintenance of levels affecting the docks and harbors, but we have not anything to say at this meeting in regard to that, except that we may want to put in a statement showing the value of the docks and harbors belonging to the Dominion Government here or the amount of money expended for the purpose of navigation.

Mr. POWELL. There may be somebody here who desires to give some evidence with respect to the natural level of the lake, the height

attained under natural conditions, and the minimum levels under natural conditions.

Mr. ANDERSON. On the point that Mr. Powell raises I have no doubt that the information may be forthcoming when the navigation interests are being presented.

Mr. POWELL. You mean when we reach it at this session?

Mr. ANDERSON. Yes.

Mr. MAGRATH. Are there any fishing interests here that wish to be heard? As there is no response, we will now take up the navigation question.

Mr. ANDERSON. On that point I understand that Mr. McLennan has certain evidence to submit, and, in the meantime, I will yield to him in order that he may introduce at this time whatever evidence he has on that point.

Mr. McLENNAN. I understand that there are parties here connected with the fishing phase of the investigation, but that the navigation interests will be heard first.

Mr. ANDERSON. As preliminary to that I want to put in a certified copy of the order in council of the Dominion Government passed on the 5th of April, 1887, authorizing the construction of the old rollerway dam. The old rollerway dam is a matter that has been up before the commission, a good many references have been made to it, and in order to get the record complete and authentic I wish to submit this order in council. I am putting this order in the record to show that at that period of time there was a request by the residents of this locality to regulate the waters of the lake and conserve them for purposes of navigation and manufacturing.

(The order in council referred to is as follows:)

CERTIFIED COPY OF A REPORT OF THE COMMITTEE OF THE PRIVY COUNCIL, APPROVED BY HIS EXCELLENCY THE GOVERNOR GENERAL ON THE 5TH APRIL, 1887.

On a memorandum dated 4th April, 1887, from the minister of public works, submitting that in October, 1884, a petition was received by him from the people of Rat Portage, Keewatin, and Lake of the Woods, as follows:

"1. That the water of the Lake of the Woods, during the past few years has been gradually decreasing, and is now so low that the lumbering and other manufacturing interests are seriously interfered with, and the general business and prosperity of the place is retarded.

"2. That between Rat Portage and Keewatin, a distance of 3 miles, a narrow neck of land divides the Lake of the Woods from the Winnipeg River. With an increased body of water and a permanent water level, this neck of land would be made invaluable to capitalists and manufacturers, and relieve the companies who have already established themselves, and are now, owing to the lowness of the water, compelled to run their mills on half time only.

"3. That the only two outlets from the Lake of the Woods to the Winnipeg River are at Rat Portage, and only a few yards wide. At a small expense to the Government these could be dammed to raise the water to the required level, and thus avoid the difficulties above stated and increase the welfare of the community and country generally.

"4. Therefore, your petitioners humbly pray that your Government will see the desirability of meeting their views herein expressed."

That since the date of the receipt of such petition other representations to the same effect have been made to him.

The minister states that the chief engineer of his departments reports that the objects for which the construction of the dam is sought are:

(a) To maintain the waters of the Lake of the Woods at a constant level, and thus permit the shallow-draft steamers, which have been built for the navigation of the lake to ply during the whole of the season of navigation, and

thus afford uninterrupted connection between the settlements around the lake and the Canadian Pacific Railway; and,

(b) To maintain a constant head of water for the mills, both saw and grist, which have been and may hereafter be erected, and which depend for their power, and therefore their constant working upon an ample supply of water, which would be given were the proposed dam constructed.

That Mr. John Mather, who is interested in large lumbering operations on the Lake of the Woods, and who, with others, has urged the necessity for the construction of the proposed work, offers to build a dam with a proper fish pass to the satisfaction of the minister of public works and the minister of marine and fisheries for the sum of \$7,000, and the chief engineer suggests that Mr. Mather's offer be favorably considered.

The minister, in view of the foregoing and the desirability of aiding by every possible means in the development of the country, and of assisting the interests of its manufacturing and other industries, recommends that the suggestion of his chief engineer be adopted, and that authority be granted to accept Mr. Mather's offer; payment of the said sum of \$7,000 to be only made after the completion of the proposed work to the satisfaction of the chief engineer of the department of public works, and further, that in order to provide for such payment, a like amount of \$7,000 be placed in the estimates to be laid before Parliament at its approaching session.

The committee submit the above for your excellency's approval; it being understood that the said sum shall only be paid when voted by Parliament.

F. K. BENNETTS,
Assistant Clerk of the Privy Council.

Mr. ANDERSON. As also a matter of record in the same connection I want to put in a copy of an agreement entered into between the government of Ontario and the Keewatin Power Co., under date of the 22d of June, 1898. Unfortunately I have not a certified copy, but I will undertake to file with the commission a certified copy. This agreement between the Keewatin Power Co. and Her Majesty, represented by the public works department of Ontario, recites:

This agreement made the 22d day of June, A. D. 1898, between the Keewatin Power Co., hereinafter called the Company, of the first part, and Her Majesty, represented herein by the commissioner of public works, hereinafter called the Commissioner, of the second part.

Whereas the Company have constructed a dam across the west branch of the Winnipeg River at Tunnell Island at or near the Lake of the Woods;

And whereas for the purpose of improving the navigation of the said lake it is expedient that the said dam should be improved by the addition of stop logs and otherwise;

And whereas it has been agreed by and between the parties hereto that in consideration of the sum of \$4,000 and other stipulations and conditions herein contained that the said Company will make all the necessary improvements and will also permit the same to be used for the improvement of such navigation as aforesaid—

Now this indenture witnesseth as follows:

The Company covenant and agree to put in all necessary stop logs, to fill the different openings a sufficient height to maintain the water of the Lake of the Woods at ordinary summer level, together with not less than two windlasses or winches furnished with chains, racking, and other necessary and latest appliances for raising or lowering the stop logs so far as the same may be required to properly regulate the height of the water, such winches or windlasses to be of such construction as to enable any of the logs to be raised with ease by four men.

The Company also covenant to provide and lay all such tracks as may be necessary to enable the winches or windlasses to be easily moved from opening to opening throughout the entire length of the dam, and that they will put in all the stop logs and properly test the appliances for taking them out and replacing them to the satisfaction of the engineer to be named by the government of the Province, and that they will place the Commissioner in possession of the entire plant in thorough working order, complete in every respect, for use by him or

the officers or servants of his department for the purpose aforesaid on or before the 25th day of August, 1898, and they will also renew or repair the stonework and other permanent portions of the dam from time to time as may in the opinion of such engineer have become unsafe or unfit for further service.

The Company also covenant and agree that they will provide a stop-log platform of sufficient size to receive all the stop logs when taken out of the different openings in the dam.

The Company further covenant and agree that the Commissioner shall have the right to regulate the height of the water and to control the dam as may be necessary.

In consideration of the foregoing covenants the Commissioner agrees to pay to the Company the sum of \$4,000, \$2,000 when the work is completed to the satisfaction of the Government engineer and certified to by him and \$2,000 on the 1st day of May, 1899.

The Commissioner also agrees to appoint and pay the caretaker and such workmen as may be required to regulate the stop logs to be placed in the dam as aforesaid.

It is further agreed that should the Company require to use the dam for power purposes they may terminate this agreement on giving one month's notice in writing to that effect, and thereafter the Commissioner shall be relieved from further charge of the said dam, but it shall nevertheless be the duty of the Company to maintain the water at ordinary summer level for such purposes as aforesaid at all proper time and times thereafter.

It is also agreed that the Commissioner is not to be responsible for damage occasioned by reason of the water being raised higher than ordinary summer level unless the same is raised for the purposes of and at the instance of the Government or by their servants or agents.

It is further agreed that should the Commissioner desire to do so he shall be entitled to surrender the charge of the dam to the Company at any time on giving one month's notice in writing, and thereafter all further responsibility on the part of the Commissioner and the Government shall cease.

It is also agreed that on such surrender the stop logs and the appliances connected therewith shall be delivered over in good repair, damage arising from ordinary wear and tear excepted.

In witness whereof the said the Keewatin Power Co. has hereunto affixed its corporate seal and the said the Commissioner of Public Works has hereunto set his hand and the seal of the department of public works the day and year first above written.

RICH. FULLER, *President.*

Witness—

J. A. CALHAM.

WM. HARTY,

Commissioner Public Works for Ontario.

Witness—

ROBT. MCCALLUM.

TESTIMONY OF MR. FRANK T. HOOPER, OF KENORA, ONTARIO.

(Frank T. Hooper, being first duly sworn, testified as follows:)

Mr. McLENNAN. You are a steamboat captain, Mr. Hooper?

Mr. HOOPER. I have been for a number of years.

Mr. McLENNAN. Will you tell us what period of time you have operated on the Lake of the Woods; since what date?

Mr. HOOPER. I first started in September, 1875.

Mr. McLENNAN. What can you tell us as to the water levels at that time and from that time on?

Mr. HOOPER. Well, it is quite a scope to go by memory, but at that time—it was in September and I was in the engineering line—the water was just about a medium height, perhaps a little lower, if anything.

Mr. McLENNAN. Will you tell us the conditions in the following year, if you can.

Mr. HOOPER. The following year the water rose very early in the spring. It rose to the highest level that I have seen it from that time to this. That was in 1876.

Mr. MIGNAULT. What month of 1876?

Mr. HOOPER. About the end of June was the highest.

Mr. McLENNAN. Could you say to what extent it was higher that year than you have seen it since?

Mr. HOOPER. Somewhere in the neighborhood of 6 inches, from 4 to 6 inches; somewhere thereabouts.

Mr. McLENNAN. Have you been on the Lake of the Woods continuously since that time?

Mr. HOOPER. Up to within a few years, and I have been backward and forward every summer more or less.

Mr. McLENNAN. What can you say as to the most suitable conditions of water levels for navigating purposes on the Lake of the Woods?

Mr. HOOPER. I should consider that water at the level that it is at present or a little higher would be the most suitable for navigable purposes on the Lake of the Woods.

Mr. McLENNAN. So far as navigation is concerned is there any objection to any higher levels?

Mr. HOOPER. Not particularly to navigation.

Mr. McLENNAN. Are there objections to lower levels?

Mr. HOOPER. Yes; many objections.

Mr. McLENNAN. Will you tell us what objections there are?

Mr. HOOPER. There are quite a number of places where the rocks are away above water.

Mr. McLENNAN. Will you tell us what is the principal business of navigation on the Lake of the Woods?

Mr. HOOPER. There is towing, or has been; general freighting, or has been; and passenger traffic, etc.

Mr. McLENNAN. Relating to the towing of logs, where do you have the particular difficulties?

Mr. HOOPER. There are several places that would be more or less difficult, but the principal difficulty would be coming through Falcon Island Narrows, Fishers Bay, and around Davys Rock, the Keewatin Narrows over here and Whitefish Bay, of course; that is just as bad as the rest of them.

Mr. McLENNAN. In what part of the lake is the most lumber business carried on.

Mr. HOOPER. It used to be from Rainy River principally, but of later years it has been Whitefish Bay and Grassy River.

Mr. McLENNAN. Is there any way of getting out of there except through this place you speak of, Whitefish Narrows?

Mr. HOOPER. No.

Mr. McLENNAN. Will you describe, as nearly as you can, the difficulties that you have to contend with at that point, Whitefish Narrows.

Mr. MIGNAULT. Where is Whitefish Narrows?

Mr. HOOPER. It is southeast of Shoal Lake from here. It is the entrance to Whitefish Bay proper.

Mr. McLENNAN. Please describe what difficulties you have to contend with at that place and state incidentally at what levels of water.

MR. HOOPER. At high water you can come through there with quite an ordinarily large tow without narrowing it up or going to any bother and come through in reasonably good time, but in low water those rocks are standing up in the middle so you have to swing to one side or the other, sometimes even pull the boom over and sluice the logs around, and gradually work through by degrees until you get your boom over.

MR. POWELL. Are you towing rafts or booms?

MR. HOOPER. In that part of the country it is altogether booms. I have never seen any rafting done in Whitefish Bay proper. Possibly there was a little rafting done in 1884. They have stopped it altogether because they could not handle them on account of the rocks.

MR. POWELL. They were not pliable?

MR. HOOPER. No; they were not pliable.

MR. MCLENNAN. What is the result of having to work your logs through that way and possibly over the reefs and against the shores?

MR. HOOPER. Sometimes it would take a day and a half to two days for a towing. Sometimes if the current and wind were favorable we could sluice them through in seven or eight hours, depending on the size of the raft.

MR. MCLENNAN. In the higher stages of the water the boom comes on through there?

MR. HOOPER. Quite easily.

MR. MCLENNAN. At what stage of water do you get through there without any difficulty?

MR. HOOPER. We would have more or less difficulty even at this stage of water. If it were higher than this it would be much easier to come through.

MR. MCLENNAN. You made some reference to Davys Rock and some other points where you have similar difficulties.

MR. HOOPER. Davys Rock is not so difficult as Whitefish Bay, but it often holds you up. When the rock is away out of water and there is another head farther in that will pile up your logs, it makes the channel so much narrower than it is when it is high water. It is more difficult to get through.

MR. MCLENNAN. You mentioned some other points where you had difficulty.

MR. HOOPER. Bishops Bay is about the same, only you can come up 2 miles and come down another way.

MR. MCLENNAN. Are there any other points that you have in mind that present the same difficulties?

MR. HOOPER. Falcon Island Narrows; there is quite a difficulty there.

MR. MCLENNAN. Do those points cover all the channels through which logs have to come that are brought to this end of the lake from the outer part where lumbering is carried on?

MR. HOOPER. Principally. There are other points that I have not been in connection with—little places that I have not been into—but those are the principal ones.

MR. MCLENNAN. The major portion of the lumbering at this end of the lake has to contend with these difficulties that you have described?

MR. HOOPER. Yes, sir.

Mr. McLENNAN. Do the difficulties at Davys Rock and Bishops Point and the other places you mentioned assert themselves at about the same water level?

Mr. HOOPER. More or less; perhaps there may be a little difference.

Mr. McLENNAN. It is only a matter of inches?

Mr. HOOPER. Yes; there would not be very much difference. Davys Rock would be the least objectionable to any of them. The sunken rock off from Davys Rock is, perhaps, deeper under water than the rest, so it would have to be quite lower to affect very much there.

Mr. MIGNAULT. Just where is Davys Rock?

Mr. HOOPER. It is what is called the Big Narrows on the map.

Mr. ANDERSON. Where is it with reference to the main steamboat channel?

Mr. HOOPER. It is right on the main steamboat channel.

Mr. McLENNAN. Can you tell anything about the water level at Davys Rock in the year 1876, to which you have already referred?

Mr. HOOPER. I got my boat on there some time in August. I had occasion to get out and lift her off with handspikes and crowbars, etc.

Mr. McLENNAN. Can you tell what depth of water there was over the rock?

Mr. HOOPER. It was up to my knees; I should judge about 14, 16, or 18 inches. I did not put a rule on it at the time. We had passed over the top of the rock before earlier in the summer, but that was the first time I knew it was there.

Mr. McLENNAN. Mr. Scovil, can you at this point give us the height of that rock?

Mr. SCOVIL. The highest point of Davys Rock is 1,060.6.

Mr. ANDERSON. What is the surface of that rock like? Is it smooth?

Mr. SCOVIL. It is fairly smooth. There are some creases in it, but it is not what you would call a particularly rough rock at all.

Mr. ANDERSON. Is it practically flat?

Mr. SCOVIL. It is rather flat. When it is beginning to show you can see a space of 6 or 8 inches across.

Mr. POWELL. Where Mr. Hooper waded may have been on a lower range of the ledge. As it stands, it really does not establish very much of anything.

Mr. HOOPER. This was the upper surface of the rock that shows when the water is just receding from it.

Mr. ANDERSON. That is where you measured it and found it up to your knees, is it?

Mr. HOOPER. We found the shallowest water we could to wade in.

Mr. MIGNAULT. And you had water up to your knees?

Mr. HOOPER. Yes.

Mr. MIGNAULT. That is about 16 or 18 inches.

Mr. HOOPER. Somewhere thereabouts.

Mr. MIGNAULT. You stood on the highest point of the rock?

Mr. HOOPER. Yes; as near as I could tell we got to the highest point we could. We were working around there for quite a while.

Mr. McLENNAN. What can you tell us of the water conditions of 1886, Mr. Hooper? What boat were you operating that year?

Mr. HOOPER. The *D. L. Mather*.

Mr. McLENNAN. With what draft?

Mr. HOOPER. Our ordinary draft that we did our towing was about $8\frac{1}{2}$ feet, but we could trim her up to quite a bit less by taking very little fuel and putting it all in the bow.

Mr. McLENNAN. Will you tell us how you found the conditions at the different points in that year?

Mr. HOOPER. We had to warp over the bar at the mouth of Rainy River in the fall of the year. In the early part of the summer we could run over it with plenty of water.

Mr. McLENNAN. Speaking of other points here, the Keewatin Channel, the Devils Gap, as also the channel here at the end of Coney Island, how did you find those?

Mr. HOOPER. We had to be just exactly in one spot every time to go through. If we varied 2 feet one way or the other we were sure to bump or strike. There was a very narrow channel that you would get the heel of your boat in, so when you were acquainted with it you would clear from the rocks, but to run right straight along you could not pass over it. You would jump over it.

Mr. McLENNAN. Which place are you referring to?

Mr. HOOPER. They are much the same. The worst place would be out here at the pump station. There is very little difference from that point and what they call Mathers Point now at the other end of Devils Gap.

Mr. McLENNAN. The other place is Keewatin Narrows, being the entrance to the Keewatin Channel?

Mr. HOOPER. Exactly.

Mr. McLENNAN. Those are the only two channels connecting these waters?

Mr. HOOPER. There is another channel, but it is much smaller, just fit for small boats or canoes.

Mr. McLENNAN. But those two are the only channels for the larger boats connecting this bay with the lake?

Mr. HOOPER. Yes, sir.

Mr. McLENNAN. What were the water conditions in 1886?

Mr. HOOPER. Well, they were very low.

Mr. MAGRATH. When you say "this bay," Mr. McLennan, you mean the bay on which Kenora is located?

Mr. McLENNAN. Yes, sir.

Mr. MAGRATH. You are speaking of the channel leading out of Kenora?

Mr. McLENNAN. Yes, sir; there are just two channels leading out into Rainy Lake—Devils Gap and Keewatin Channel.

Mr. HOOPER. There are some other openings, but there are no channels.

Mr. McLENNAN. You said the water was very low in 1886.

Mr. HOOPER. I could not just state from memory. I have some notes.

Mr. POWELL. You have written notes?

Mr. HOOPER. Yes.

Mr. POWELL. When were they made?

Mr. HOOPER. I was asked to give some information and I took notes off my old log book when I used to keep a continuous log right along.

Mr. POWELL. The original log would be very important if made at the time.

Mr. McLENNAN. Is this the statement to which you refer [passing a paper to the witness]?

Mr. HOOPER. Yes, sir; that is it.

Mr. McLENNAN. Was this statement, which is dated March 26, 1913, taken from your original log?

Mr. HOOPER. When I was asked to furnish some information if I could I got after my logs, and I found that they were defaced more or less and written over. I had put them away, but the children had gotten them out, and there were one or two that were missing; but I had enough, with some of my accounts that I could collect from memory, to find just where I was at.

Mr. McLENNAN. Do you wish to have the statement read?

Mr. POWELL. If it was taken from the log or a compilation of that information and other contemporary matter. In a very important matter like this the original log should be here.

Mr. STEENERSON. I understand the witness to say that this is partly from memory.

Mr. HOOPER. There is very little from memory. Of course, there are spots here and there that were written over.

Mr. WHITE. We would like to hear the statement.

Mr. STEENERSON. Of course, if you are going to enforce the rules of evidence in court I would assume that this would not be admitted.

Mr. POWELL. It is not a question of the importance of rules of evidence but the importance of an old document.

Mr. MAGRATH. Read it, anyway.

(Mr. McLennan then read the letter containing the information furnished by Mr. Hooper, which is as follows:)

KENORA, ONTARIO, *March 26, 1913.*

STUART S. SCOVIL, Esq.,
*Assistant Chief Engineer,
 Manitoba Hydrographic Survey,
 Winnipeg.*

DEAR SIR: Re water levels on the Lake of the Woods. Regarding the levels of the water on the Lake of the Woods before and since the building of the old dam I may say that I have no recollection or data prior to 1875. In September the water was at medium height. From what I learned it had been much higher during the summer.

In the latter part of May, 1876, the ice went out with the water rising very fast and continued rising until the end of June, when it attained the highest level which I have seen. The marks can be seen at present. During July, 1876, I measured the depth of water over the highest point of Davys Rock, which is situated on the main steamboat channel some 25 miles from Kenora, and here I found a depth of 16 inches. My reason for doing this was occasioned by my boat running on the above reef, known as Davys Rock.

I was supplying E. G. Gardin, chief engineer, who was locating the Canadian Pacific Railroad and had wintered at Northwest Angle for the seasons of 1875 and 1876. The water fell about 6 feet by the end of October.

The season of 1877 I supplied the Fort Frances Canal from the Northwest Angle. The water was low in the spring, but rose in June to within 6 inches of high-water mark of the summer of 1876, but went down during the latter part of the summer to about 7 feet below the high water of the summer of 1876.

During the summer of 1876 I was still supplying the Government canal at Fort Frances. The river being open, I sailed practically all winter. The water was very low in March and April and we sometimes had difficulty in getting over unavoidable shoals in the river. On the 20th of April, 1878, we crossed the lake to Northwest Angle and found the lake about 2 feet lower than in September of 1877.

The water rose in June to about 3 feet of high-water mark and remained at a fair height until the fall of the year, when it attained a higher level.

Laid up the Government boat and started building one for myself. Sailed from Fort Frances on August 11, 1879, with the steamship *Mosher*. Water was very low, being about the same height as in 1878.

In May of 1880 the water rose almost to high-water mark, but fell by the end of September to almost low-water mark. The river had a freshet so that we made Fort Frances on our last trip in the fall.

In the summer of 1881 the water rose almost to high-water mark and did not fall as rapidly as usual, but remained at a fair level.

In the summer of 1882 I was superintending the building of the steamship *D. L. Mather* and did not keep a log of the rise and fall of the waters, but judge that the levels were as usual, as I would have noted had there been any great changes.

The season of 1883 found the water lower than usual. Even at midsummer there was not much of a rise.

During the season of 1884 water was very low in the spring and did not rise until September, when it rose to within a foot of the high-water mark.

In the spring of 1885 the water was at a fair height and rose to within a foot of high-water mark, but fell early in the fall.

In June of 1886 the waters rose, but did not reach within about 18 inches of high-water mark. They receded in the fall to within 18 inches lower than the low water of 1879, owing, no doubt, to the different raceways being constantly running. I had to kedge my boat over the bar at the mouth of the Rainy River from September to the end of the season.

The water was still lower in 1887, and I had to trim boat on even keel and use anchor to get over the bar at the mouth of Rainy River. Early in the summer the water began to rise at the north end of the lake, and later I noticed a decided rise all over the lake. It had been a very dry season and there was little flood in Rainy River; therefore I concluded that the rise in the lake was occasioned by the dam at the source of the Winnipeg River.

In the spring of 1888 the water was nearly 1 foot higher than in the fall of 1887. Rainy River rose in June and the water came up to within 4 to 6 inches of the season of 1876. It again fell in the fall, but not as rapidly as usual.

The spring of 1889 the water was at a medium level and rose to within 6 inches of high-water mark, but fell to normal in the fall.

The levels have continued much the same, but with variations of from 3 to 5 feet at different seasons. The waters have held their levels much longer than usual, and have never fallen so low as in the spring of 1887 nor as high as 1876.

The building of the dam at Fort Frances has partially held the waters back and has, no doubt, caused the sand bar at the American Point, but this will, I think, eventually clear itself when Rainy Lake is full and the natural amount of water will have come through or over the dam as it did previously to the building thereof.

In 1879 George McPherson, then Indian agent at Kenora, stated to me that in 1864 extreme high water occurred on the Lake of the Woods, so high that the boats were able to land at the top of the bank at the Hudson Bay post at Rat Portage. Mr. McPherson stated that marks of this high water are still visible on the shore of Whitefish Bay, and these marks I have also seen.

I remain, faithfully, yours,

F. T. HOOPER.

Mr. McLENNAN. Mr. Hooper, can you tell us the present depth of the water at those points you have mentioned, Keewatin Narrows, Mathers Point, and the passage here of Coney Island?

Mr. HOOPER. I have not been sailing on the lake constantly and I have not given it the same attention, so I wouldn't know.

Mr. POWELL. Mr. Hooper, do you subscribe with the sanctity of your oath to the statement that has just been put in?

Mr. HOOPER. Yes, sir.

Mr. McLENNAN. You have referred to high-water marks. What do you mean by that?

Mr. HOOPER. The highest mark that I have seen since I have been on the lake was in the summer of 1876. I have never seen the water as high since.

Mr. POWELL. Are these original logs in such a state that you could make anything out of them by looking at them?

Mr. HOOPER. No. I burned all but two, and I would have burned them also if I had had them.

Mr. POWELL. With your assistance could we make anything out of that portion of the original logs that you have retained?

Mr. HOOPER. There is very little reference to water in them. It is more the business of the boat.

Mr. WHITE. I tried to get some information from Capt. Hooper's old logs and was surprised when he stated that they had recently been burned. He had either one or two of them. He has mentioned here that his children used them as scribbling books, and the two that I had were used by his wife, I think. There are cooking receipts on the backs of them. I just mention this by way of supporting Capt. Hooper's statement that he thought he was through with them and they had been going around the house loosely in after years when he was through with navigation.

Mr. McLENNAN. Mr. Hooper, can you give us an idea of how much lower the water of 1886 was than that of other years?

Mr. HOOPER. Of course, I haven't got exact measurements. I should fancy it would be in the neighborhood of 8 feet.

Mr. McLENNAN. But lower than the water of other years.

Mr. HOOPER. That is what I mean, from extreme low water to extreme high water it is somewhere in the neighborhood of 8 to 8½ feet. Of course, I have not had marks and data to go to work and get the exact inches, but I think you could find the whole of them from the level of Davys Rock.

Mr. MIGNAULT. Do you say that that was the difference between extreme high water and extreme low water?

Mr. HOOPER. Somewhere thereabouts; yes.

Mr. McLENNAN. What I wish to get particularly, Capt. Hooper, is how much lower the water of 1886 was than the low water of other ordinary years. I understood you to say that it was exceptionally low that year.

Mr. HOOPER. My statement says something like 16 or 18 inches. I think you can confine yourself to that.

Mr. McLENNAN. That is what you say it is?

Mr. HOOPER. Yes.

Mr. McLENNAN. Can you give us any kind of an estimate that would indicate the loss in the towing of logs or the expense by reason of the troubles to which you have referred?

Mr. HOOPER. In low water it would, perhaps, add on from 20 to 25 per cent more to the towing of logs. Some trips it would over-run that and sometimes it would not. It would depend a good deal on the weather and the class of logs you have or the class of tow you have, etc.

Mr. LAIRD. Is Mr. Gardin, the person mentioned in your statement, still living?

Mr. HOOPER. No; he died some years ago.

Mr. McLENNAN. Will you describe to us Ash Rapids, that is as to navigation? Ash Rapids being the entrance to Shoal Lake.

Mr. HOOPER. When I was running in that direction, when I used to go through when the road was building, I never attempted to go

over Ash Rapids. We had a dam there and a small boat above, and we used to transfer the stuff over a tramway. Since that time I have scarcely been there at all. There are other men running up there frequently who can tell you about that.

Mr. McLENNAN. You, however, know that there has been expenditures made in clearing the channel there for purposes of navigation?

Mr. HOOPER. Yes; I have been through there since that was made, but I never paid any attention to how much the head was or anything about the draft of the water. I was only a passenger.

Mr. McLENNAN. In the towing of logs through a place like Whitefish Narrows do you have difficulties other than those of delay?

Mr. HOOPER. Yes; there is the loss of logs very frequently, especially if you are going along in the night and you do not see what you lose until you come back your next trip and find them scattered along the shores.

Mr. TAWNEY. Capt. Hooper, you say you are familiar with Ash Rapids?

Mr. HOOPER. No, sir; I am not familiar with them.

Mr. TAWNEY. Have you ever been up there?

Mr. HOOPER. Yes; I have been up there; but there are others here who are well acquainted and who have run there constantly. I used to go up there in the early days, and at this side of Ash Rapids we had a time to hold the water up for the little boat above.

Mr. TAWNEY. Which way does the water run at Ash Rapids?

Mr. HOOPER. Both ways. It is tidewater. In this high water of 1876 there was a fall there and the Indians could not get up with a canoe. They had to make a portage. In the fall of the year it was just the opposite.

Mr. POWELL. That was before improvements in the channels were made?

Mr. HOOPER. It was before outlets and dams or anything else were built. That was in 1876.

Mr. STEENERSON. What was the price for towing logs?

Mr. HOOPER. Well, there was very little done by contract. I had one contract at \$1 a thousand.

Mr. STEENERSON. You said the low water added 25 per cent to the expense?

Mr. HOOPER. Yes.

Mr. STEENERSON. Would that be 25 cents per thousand?

Mr. HOOPER. Just about 25 cents.

Mr. STEENERSON. Was that the average rate?

Mr. HOOPER. Well, that was the only contract, and that never was completed. The logs were hung up, and I never got the logs to tow until the following season.

Mr. STEENERSON. You never got your dollar, either, did you?

Mr. HOOPER. I was out my dollar.

Mr. POWELL. You seem to be familiar with the Rainy River. Do you know anything about Oak Point?

Mr. HOOPER. On Rainy River?

Mr. POWELL. Yes; at the mouth.

Mr. HOOPER. I do not know what they call Oak Point. You see they have had so many different names from one time to another.

Mr. POWELL. Maybe you recognize it as American Point?

Mr. HOOPER. At the old fishing grounds?

Mr. POWELL. Yes.

Mr. HOOPER. Yes; I know that very well.

Mr. POWELL. What is your first recollection about it? Was it a continuous strip of land or a series of islands with gaps of water between?

Mr. HOOPER. The American side was a continuous stretch. There were no channels there at all.

Mr. POWELL. That is, according to your first recollection?

Mr. HOOPER. From my first recollection; from that point down to the bottom of what they call the Four Mile Bay.

Mr. ANDERSON. There was a bar at the mouth of Rainy River prior to the construction of the dam at Keewatin, was there not?

Mr. HOOPER. There was always a bar there since I remember.

Mr. ANDERSON. Since ever you had any experience in navigating these waters there was a bar there?

Mr. HOOPER. Yes.

Mr. ANDERSON. And in low water the bar gave difficulties to navigators?

Mr. HOOPER. Yes.

Mr. ANDERSON. You spoke of the high water of 1876 having reached the highest level in your experience. How does that compare with the high-water mark on the rock?

Mr. HOOPER. There are only a few places, but there are some places that compare very closely—within a few inches of that high-water mark.

Mr. ANDERSON. That is, the high water that you saw in 1876 was within a few inches of the highest water mark?

Mr. HOOPER. In 1876 was the highest that I have seen at all, marks or anything else, except this one in Whitefish Bay that Mr. McLennan referred me to, and that is up 9 feet above the ordinary high-water mark.

Mr. ANDERSON. Do you know the Kennedy high-water mark?

Mr. HOOPER. Yes. I should fancy that comes within a few inches. I have seen the cuts that Kennedy put there.

Mr. ANDERSON. You say that the high-water mark of 1876 would come within a few inches of the Kennedy high-water mark?

Mr. HOOPER. Very close to that high-water mark.

Mr. ANDERSON. Your high-water mark that you saw was a few inches lower than the Kennedy high-water mark?

Mr. HOOPER. Yes; I fancy it was.

Mr. ANDERSON. How long did that high water of 1876 last?

Mr. HOOPER. It would be only three or four weeks and maybe more.

Mr. POWELL. Mr. Hooper, I want to see whether or not you understand the matter. Do you mean that the Kennedy mark is below or above what you had ever observed?

Mr. HOOPER. A little above what I considered the high-water mark of 1876.

Mr. GARDNER. Are you positive about that?

Mr. HOOPER. I never measured Kennedy's mark. I never took that trouble.

Mr. GARDNER. Have you ever seen those markings yourself?

Mr. HOOPER. Yes.

Mr. GARDNER. You have been there, have you?

Mr. HOOPER. Yes.

Mr. ANDERSON. What would the effect upon navigation be to lower the level of the water say 3 feet below the present level?

Mr. HOOPER. It would add considerable expense to the towing and make it more difficult for navigation.

Mr. ANDERSON. Would it make it much more difficult?

Mr. HOOPER. Quite a bit.

Mr. ANDERSON. You know the channel at Devils Gap, of course. Every navigator on the lake knows that.

Mr. HOOPER. Yes.

Mr. ANDERSON. Has the water ever been so low there——

Mr. HOOPER. At the Devils Gap there is good water always, but the shoal this side of Devils Gap and at the pumping station here and also at Mathers Point is much shallower than it is in the Devils Gap proper.

Mr. ANDERSON. Has low water ever interfered with navigation at those points?

Mr. HOOPER. We broke some wheels there in places and struck every now and then.

Mr. ANDERSON. That was when the water was low.

Mr. HOOPER. When the water was low.

Mr. ANDERSON. That was in the main channel?

Mr. HOOPER. Right there in the channel, the best water we could find.

Mr. ANDERSON. One of the principal uses for navigation on the lake at the present time is for towing, is it not?

Mr. HOOPER. It has been.

Mr. ANDERSON. There is considerable towing even at the present time?

Mr. HOOPER. Oh, yes.

Mr. ANDERSON. What draft boat is necessary for giving efficient towing?

Mr. HOOPER. To bring any respectable tow at all it would require a draft of from 7 to 8 feet.

Mr. POWELL. That would depend upon whether the boat is a side-wheeler or a stern-wheeler or uses a propeller. Which are you speaking of?

Mr. HOOPER. A propeller.

Mr. STEENERSON. No boats can now go past the mouth of Rainy River, the old channel, can they.

Mr. HOOPER. Of course, I haven't been up there this summer.

Mr. STEENERSON. Well, there have not been any boats going in that old channel for many years, have there?

Mr. HOOPER. I should fancy it was about four or five years.

Mr. STEENERSON. They go a mile east of there, by the Canadian islands.

Mr. HOOPER. Yes; down behind the sand hills.

Mr. STEENERSON. So that that old channel is entirely filled up?

Mr. HOOPER. It is entirely filled up.

Mr. STEENERSON. But it is filled so it can not be navigated?

Mr. HOOPER. It is not navigable for deep-draft boats; no.

Mr. ANDERSON. It is not navigable for anything except very small boats, is it?

Mr. HOOPER. I suppose you could go through there with about 5 feet.

Mr. STEENERSON. I understood from the evidence given at War-road that there were not any boats that went that route any more.

Mr. HOOPER. I went around that point two years ago with a boat drawing maybe 5 feet. I did not measure the boat, but that is what they called it.

Mr. STEENERSON. In that new channel there has been some dredging necessary over on the other side of the islands? There has been a Canadian dredge there for several years, has there not?

Mr. HOOPER. Yes. There has been dredging there, but they have been working the most of the time where they did not need to work.

Mr. POWELL. You must have had in those days landing stages. Are there any of those landing stages in existence to-day?

Mr. HOOPER. I do not think so.

Mr. POWELL. Have the wharves along the harbor front here at Kenora been changed in height since olden times?

Mr. HOOPER. Not materially. They were just about the same as they are now.

Mr. WYVELL. Capt. Hooper, do you remember the years that you towed logs quite extensively? Did you tow them back as far as 1876?

Mr. HOOPER. No. The first logs I towed from Rainy River was in 1885.

Mr. WYVELL. Did you tow them in 1886?

Mr. HOOPER. Yes.

Mr. WYVELL. You towed them until about what time?

Mr. HOOPER. I was towing up until 1893.

Mr. WYVELL. During that period you had some years of low water and some years of high water; that is, during the towing season?

Mr. HOOPER. Yes.

Mr. WYVELL. Did you get more money for towing logs during the period of low water?

Mr. HOOPER. We used to tow altogether by time after that one contract that I spoke of.

Mr. WHITE. Capt. Hooper, was it in 1874 you came here or in 1875?

Mr. HOOPER. 1875.

Mr. WHITE. Was there a high-water mark on the lake at that time?

Mr. HOOPER. When I came I did not give it any attention. I was an engineer on the boat then. I did not notice the mark, but when I came up, of course, I had to bring the big boat into the Northwest Angle, and we had just a little difficulty in getting in. We almost decided to anchor out at what they call the Devils Elbow. We tried to get the boat in, and went into the Northwest Angle Bay. They had been running up all summer. The water was much higher, but how much I could not say.

Mr. WHITE. Early in the spring of 1876, before the high water came up, do you remember any high-water marks?

Mr. HOOPER. No.

Mr. WHITE. When the water was up at its highest stage in 1876, did you notice any watermarks above?

Mr. HOOPER. No; I did not; not that I recollect.

Mr. WHITE. What would be the most pronounced fact in connection with the high water that attracted your attention in 1876?

Mr. HOOPER. As the water began to fall and we began to hit more rocks that we did not know of, we paid attention to the water, and we noticed what the water was during the summer. At places where we would come through in the summer we were striking in the fall.

Mr. WHITE. Can you recollect whether the appearance of the mark in 1876, after the water receded, was any fresher than the clean-cut marks that are there at the present time?

Mr. HOOPER. It was a clean-cut mark then because it was fresh. The marks that you see now are 5 or 6 inches above the others. Others are quite distinct for quite a little distance. At that time this was a distinct mark by itself all over, and remained there for several years. If you take the pains to go up and look, you might find some of the marks there yet.

Mr. WHITE. One thing I had in mind in making the inquiry was to ascertain whether there had been a mark at about that stage previous to the high water which you had observed in 1876?

Mr. HOOPER. I couldn't give you any information on that. I did not notice any. I did notice our own 1876 watermark. That was distinct, and there were no marks between that and the water itself, so we were quite satisfied that that was the watermark for that year.

Mr. WHITE. Have you been up and down Rainy River frequently?

Mr. HOOPER. Yes; I used to run through constantly, for a long time, and when I was towing I did not go up the Rainy River, only as a passenger once in a while.

Mr. WHITE. When you were navigating Rainy River, what means did you take before entering the river to ascertain whether there was going to be navigation in the Long Sault and Manitou Rapids?

Mr. HOOPER. I could tell just as soon as I got into the river.

Mr. WHITE. How could you tell?

Mr. HOOPER. Just by the stage of water in the river.

Mr. WHITE. By soundings?

Mr. HOOPER. We did not use to do much sounding, but noticed the appearance of the banks. Then, when we got 6 miles below the Soo we used to sound. When we could get over that we could get up to Fort Frances in the early days.

Mr. WHITE. It has been stated that the range between extreme high water and extreme low water on the Lake of the Woods might be as much as 10 feet.

Mr. HOOPER. I would think so; somewhere about 10 feet or a little better would cover it.

Mr. ANDERSON. Did you ever know that much fluctuation in one year; that is, 8 feet?

Mr. HOOPER. I do not hardly think the fluctuation was that much in one year. It would be the high water in one year to the low water in another year.

Mr. STEENERSON. Did you not first say that the variation was from 6 to 7 feet?

Mr. HOOPER. No, sir; I do not recollect saying that. In one year, perhaps, it would only fall about 6 or 7 feet. From the high water of one year to the low water of another year, the extreme high water to the extreme low water, I think the variation would range about 8 to 8½ feet.

Mr. STEENERSON. That is during all the period that you are familiar with the lake?

Mr. HOOPER. Yes.

Mr. McLENNAN. Can you tell us what caused the sand bars or the trouble at the mouth of Rainy River; that is, where the filling occurred?

Mr. HOOPER. This lowest point I should attribute to the building of the dam. There was no alternation in the mouth of the river from the time the dam was built up until I quit going, and that was in 1893, and I used to run several times afterwards. I ran up there in 1897 and 1898 and 1900. Of course, I was not towing, but there was no perceptible change. There might have been a slight change. I went up Rainy Lake then. I was up in Rainy Lake for several years. After the dam was built at Fort Frances and held the water back for two or three years our lake was very low here, and I attributed that to the constant wash of the lake coming in and not sufficient water going down from the river to carry it out as usual.

Mr. ANDERSON. When you speak of the dam you mean the dam at Fort Frances?

Mr. HOOPER. Yes. That was the dam that held the water back from here, but this dam here was built in 1887, and I ran constantly on from 1887 until 1893 towing, coming through the mouth of the river all the time. Two or three years afterwards I was motoring a fish boat for myself and there was no perceptible change through that time, at the mouth of the river.

Mr. ANDERSON. Did you ever do any navigating on Rainy Lake?

Mr. HOOPER. Yes; I ran there two seasons.

Mr. ANDERSON. In what boat?

Mr. HOOPER. The *Majestic*.

Mr. ANDERSON. Where did she run?

Mr. HOOPER. From Fort Frances to Mine Center.

Mr. ANDERSON. What was going on at Mine Center?

Mr. HOOPER. There was all kinds of business; passenger and freight.

Mr. ANDERSON. That was just in the days of mining in that country?

Mr. HOOPER. Yes, sir.

Mr. ANDERSON. How about the business of mining in the lake of the Woods?

Mr. HOOPER. I did some of that. My boat was too big a boat to send out on jobs of that kind.

Mr. ANDERSON. How were all the supplies for these mines taken in in those days?

Mr. HOOPER. By boat.

Mr. ANDERSON. All the mining depends on boats, both in the Rainy Lake and here?

Mr. HOOPER. It did at that time. I do not know what they have now.

Mr. ANDERSON. There is no difference in the railroad facilities here now. In reviving the mining business it would have to depend on navigation.

Mr. HOOPER. Yes.

Mr. ANDERSON. There is an opening here for mines and mines have been worked here quite extensively; coal mines, for instance?

Mr. HOOPER. Yes.

Mr. ANDERSON. And there is some talk of a revival of it now, is there not?

Mr. HOOPER. I hope we will have it.

TESTIMONY OF MALCOLM McRITCHIE.

(Malcolm McRitchie, having been duly sworn, testified as follows:)

Mr. McLENNAN. You are a steamboat captain?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. On the Lake of the Woods?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. How long have you been engaged in that capacity on the Lake of the Woods?

Mr. McRITCHIE. Captain, for several years.

Mr. McLENNAN. When?

Mr. McRITCHIE. From 1888.

Mr. McLENNAN. Can you tell us what water levels on the Lake of the Woods are best suited for navigation purposes?

Mr. McRITCHIE. Well, the water we have this summer was very suitable.

Mr. McLENNAN. Any objection to high water?

Mr. McRITCHIE. No.

Mr. McLENNAN. There is no objection to high water?

Mr. McRITCHIE. No.

Mr. McLENNAN. What about lower water?

Mr. McRITCHIE. There are objections to low water for navigating purposes.

Mr. McLENNAN. Will you just state the objections.

Mr. McRITCHIE. Well, it is harder to get along towing logs when the water is lower, harder to get into the rivers and creeks and bays, where it is shallow, with boats.

Mr. McLENNAN. Were you engaged in towing logs in 1911?

Mr. McRITCHIE. I was.

Mr. McLENNAN. For what company?

Mr. McRITCHIE. Rat Portage Lumber Co.

Mr. McLENNAN. Will you mention some of the difficulties that you had in that year, which was a year of lower water than ordinary time?

Mr. McRITCHIE. Well, in 1911 we could not get to Rainy River at all with our logs. We had to get smaller boats and bring them down to us and lay outside until the smaller boats brought them to us.

Mr. POWELL. Was that on account of the bar?

Mr. McRITCHIE. On account of the low water.

Mr. POWELL. On the bar?

Mr. McRITCHIE. Well, there were 6 or 7 or 8 miles we could not navigate at all; the outer channel was closed to us.

Mr. McLENNAN. Is that Grassy Narrows, or Grassy River, is it?

Mr. McRITCHIE. Grassy River.

Mr. McLENNAN. What do you say as to that place?

Mr. McRITCHIE. You could not get there that year with any draft boat.

Mr. McLENNAN. How near could you get to it?

Mr. McRITCHIE. Not within 2 or 3 miles of it.

Mr. McLENNAN. Were there considerable lumbering operations in there?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. What did you do in that case?

Mr. McRITCHIE. I think that some of the logs were left there until the following year, but I am not positive. I think that is the year they were left there.

Mr. McLENNAN. What do you say as to Grassy River? Is there a settlement there of any kind?

Mr. McRITCHIE. Oh, yes; there is quite a settlement. I do not know how many people, but quite a big settlement.

Mr. McLENNAN. Have you any industries there, or anything of that kind?

Mr. McRITCHIE. Farming and lumbering; that is all; and one saw-mill there that I know of.

Mr. McLENNAN. You say you could not get within 3 miles of the place?

Mr. McRITCHIE. Not with an 8-foot draft boat.

Mr. McLENNAN. Were any efforts being made to remedy that condition recently?

Mr. McRITCHIE. At Grassy River?

Mr. McLENNAN. Yes.

Mr. McRITCHIE. I think there was some dredging done this year.

Mr. McLENNAN. To deepen the channel?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. What do you say as to the necessity or not for a deep-draft boat?

Mr. McRITCHIE. Well, a light-draft boat is not much use for towing on the lake. You want a boat with some draft, or you can not do anything, especially on that part of the lake with open water.

Mr. McLENNAN. Have you operated boats other than towboats on the lake?

Mr. McRITCHIE. Passenger boat one season; mostly all towboats.

Mr. McLENNAN. What do you say as to the draft for a passenger boat for plying on the open?

Mr. McRITCHIE. Oh, I do not know; I suppose a 6 or 7 foot draft ought to be suitable; you can not do much with a boat less than 6 or 7 feet.

Mr. McLENNAN. Were there other places of difficulty that you had to contend with, say in 1912?

Mr. McRITCHIE. Well, in 1912, I did not operate any on the lower end. I did all my work with the one boat.

Mr. McLENNAN. Do you know anything of difficulties in the channel at Big Island, near Garden Island?

Mr. McRITCHIE. Yes; it was shallow there for it, and a passenger boat in stormy weather had to go around by the tow channel, especially at night, not because there was not enough water there, but because when there was a sea on they would not take a chance.

Mr. McLENNAN. They had to go round another channel?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. Which would take them how much farther?

Mr. McRITCHIE. Probably a difference of 10 miles—very near, somewhere around there.

Mr. McLENNAN. Have you had any experience at Davys Rock and Bishops Point?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. Tell us what your troubles were there?

Mr. McRITCHIE. Well, at low water at Bishops Bay, it is full of reefs, and in low water they are sticking out of water, and you have to dodge around them and take smaller tows in order to get along among those rocks and reefs and losing logs in them.

Mr. McLENNAN. How much lower than the present water level would it need to go to make difficulty at those different points you have been speaking of?

Mr. McRITCHIE. That bay is getting difficult now. At one time you could tow all over it, and now the water is falling, it is becoming difficult to tow.

Mr. McLENNAN. What have you to say as to the channel east of Goose Portage Point? Does that get troublesome?

Mr. McRITCHIE. No.

Mr. McLENNAN. That is only in the real low water?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. That is with what boat?

Mr. McRITCHIE. With a 7 or 8 foot draft boat.

Mr. McLENNAN. Have you had experience at Whitefish in the narrows in the towing?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. You have heard Capt. Hooper describe the difficulties that are to be contended with there, and what have you to say as to that?

Mr. McRITCHIE. Low water makes it more difficult and more expensive.

Mr. McLENNAN. Could you, in any way, express the extent to which you would experience the difficulty or the loss?

Mr. GLENN. All this evidence you have been giving is since the dam was built?

Mr. ANDERSON. No.

Mr. GLENN. 1911 is since the dam was built?

Mr. McLENNAN. Yes.

Mr. GLENN. How many years have you navigated since the dam was built?

Mr. McRITCHIE. I have been on the lake since 1883; I have had charge of a boat since 1888, and been at it continuously since.

Mr. GLENN. How has it been since the dam was built?

Mr. McRITCHIE. It has been low some times.

Mr. GLENN. How was it in 1911?

Mr. McRITCHIE. It was low then.

Mr. GLENN. And since?

Mr. McRITCHIE. Not as low as that.

Mr. GLENN. What level has it attained?

Mr. McRITCHIE. I do not know the level.

Mr. GLENN. You think it should be still higher?

Mr. McRITCHIE. For navigating purposes it ought to be.

Mr. TAWNEY. Have you navigated the lake this year?

Mr. McRITCHIE. Yes.

Mr. TAWNEY. Have you experienced any difficulty this year in navigating on account of the stage of water?

Mr. McRITCHIE. Not this year; no.

Mr. GLENN. So that the stage this year was satisfactory to navigation?

Mr. McRITCHIE. Yes; satisfactory.

Mr. KEEFER. This Grassy River place you speak of, where there is a settlement—is there any other means of getting in and out of there except by water? Any railroad there?

Mr. McRITCHIE. No railroad there; there is a town road there.

Mr. KEEFER. With the water transportation you can get in there with a little bit of dredging?

Mr. McRITCHIE. Yes.

Mr. KEEFER. Is there any water communication there, outside of 20-mile drive?

Mr. McRITCHIE. It is all water communication outside of that.

Mr. KEEFER. You are speaking of Big Grassy?

Mr. McRITCHIE. Big Grassy.

Mr. BERKMAN. How wide are the tows?

Mr. McRITCHIE. It depends where you are taking them; if you are taking them from Rainy River, you would make them about 250 feet wide.

Mr. KEEFER. In speaking of a draft of 6 or 7 being necessary on the lake—why is that?

Mr. McRITCHIE. To be safe, I think you would want that.

Mr. KEEFER. Where is the danger in navigation, as far as the sea is concerned?

Mr. McRITCHIE. On the southern end of the lake.

Mr. KEEFER. What do you call it?

Mr. McRITCHIE. The Big Traverse.

Mr. KEEFER. You get quite a sweep of water?

Mr. McRITCHIE. Yes; quite a sweep.

Mr. KEEFER. Give the commission an idea of the extent of that sweep.

Mr. McRITCHIE. I suppose from Warroad to Grassy River must be 40 miles.

Mr. KEEFER. So that for safety there should be some depth to the boat?

Mr. McRITCHIE. Yes.

Mr. KEEFER. For towing, you want to get a grip on the water?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. You said that the stage of the water this year was satisfactory for navigating purposes?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. But a little while before you said that since the water started to drop you experienced difficulty, or it was not so satisfactory, did you not?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. What you meant was that the level of the water, at its highest stage this year, was all right——

Mr. McRITCHIE. That is what I meant.

Mr. ANDERSON. That it would be all right for navigating purposes?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. Can you tell me any other settlements that are served by water and not by railway, except Grassy River, around the lake?

Mr. McRITCHIE. There is a settlement all along that shore, Big Grassy and Spruce Creek further east along that shore.

Mr. ANDERSON. Any other places, any other settlements around the lake, any settlements on the west side of the lake?

Mr. McRITCHIE. Not that I know of. I am not familiar with them.

Mr. ANDERSON. You are speaking of the east side of the lake?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. Along how many miles of shore does the settlement extend there?

Mr. McRITCHIE. Oh, I guess it must be 25 miles along there.

Mr. ANDERSON. And there are settlers in there?

Mr. McRITCHIE. I think it is pretty nearly all homesteaders along there.

Mr. ANDERSON. Is lumber an important industry in this region, along the lake?

Mr. McRITCHIE. Yes; settlers are more or less interested in lumbering.

Mr. ANDERSON. It is one of the principal industries on the Lake of the Woods?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. Do you remember when the old rollerway dam was constructed the first time?

Mr. McRITCHIE. Yes; I do.

Mr. ANDERSON. Do you happen to remember whether you were one of the citizens of Kenora who petitioned for that?

Mr. McRITCHIE. I do not.

Mr. ANDERSON. What was the object in having it put in?

Mr. McRITCHIE. The water got so low they could not navigate or run their mill.

Mr. ANDERSON. It was put in for the purpose of navigation and running the mill?

Mr. McRITCHIE. Yes.

Mr. ANDERSON. Did it have any effect in improving navigation?

Mr. McRITCHIE. The water went up.

Mr. ANDERSON. Did it have any effect on improving navigation, either that dam or the newer dam put there by the power company?

Mr. McRITCHIE. I would think it did.

Mr. GLENN. Is there more or less navigation on the river since the railroad was completed around here?

Mr. McRITCHIE. Well, there is more navigation since the railway was completed.

Mr. GLENN. Is the lumber interest getting less or greater?

Mr. McRITCHIE. Well, I do not know now. I guess there was no lumbering industry when the railway was built.

Mr. GLENN. Is the lumber interest around these lakes greater or less the last few years?

Mr. McRITCHIE. It is less the last two years.

Mr. GLENN. In other words, the timber has been pretty nearly all cut down around the lakes?

Mr. McRITCHIE. There is lots of timber here.

Mr. GLENN. Is it greater or less the last two or three years?

Mr. McRITCHIE. Well, it is less the last couple of years.

Mr. LAIRD. Why was it that it was less this last year or two?

Mr. McRITCHIE. No sale for the lumber.

Mr. POWELL. I got a different impression from you when you were answering in direct examination than in the subsequent examination with respect to your idea of the sufficiency or efficiency of the lake level this year with respect to navigation. The first impression I got was that this year was satisfactory all throughout the season.

Mr. McRITCHIE. This year, when the water was at its highest.

Mr. POWELL. Did you experience any difficulties when the water was low this season?

Mr. McRITCHIE. No.

Mr. POWELL. For navigation?

Mr. McRITCHIE. No.

Mr. POWELL. When did it go up to a high level this year or to the highest level that it attained—what month?

Mr. McRITCHIE. July, I guess.

Mr. POWELL. Previous to that did you experience any difficulty of navigation on account of shallowness of the water?

Mr. McRITCHIE. No.

Mr. POWELL. And certainly during the high-water season you did not?

Mr. McRITCHIE. No.

Mr. POWELL. Now that it is falling do you experience any difficulty in navigating?

Mr. McRITCHIE. No.

Mr. POWELL. To sum the whole matter up, if the condition of things during the present season were continued, would it be satisfactory to you as a navigator of the lake?

Mr. McRITCHIE. Yes; it would be. Of course, all navigators prefer high water.

Mr. POWELL. So far as this witness is concerned, for two phases it is all right; but so far as the phase is concerned, with regard to the relative height of the lake, before the dam was placed in and since, it has not been touched.

Mr. ANDERSON. He has only been navigating since the dam was put in.

Mr. BERKMAN. Some of the lumbermen who used to be here have moved away?

Mr. McRITCHIE. Some of them.

Mr. BERKMAN. How many mills have been burned or removed in the later years? That is mills of any size?

Mr. McRITCHIE. About four, I think.

Mr. BERKMAN. And do you account for the removal of these mills by reason of the timbered area decreasing?

Mr. McRITCHIE. I do not understand your question.

Mr. BERKMAN. Is the fact that the amount of timber available for cutting into logs and making lumber is decreasing, the reason that the mills have been removed, or not built up since they were burned down?

Mr. McRITCHIE. No; I do not think so; other mills have taken their places.

Mr. KEEFER. Has the total output of lumber increased or decreased? I understand when there were six or seven mills here, as against what there are now, the output of lumber was greater than when you had the greater number of mills; do you know how that is?

Mr. McRITCHIE. I think that is right.

Mr. KEEFER. I am so instructed. As regards this area of cutting logs, you are allowed to cut smaller logs in size than formerly?

Mr. McRITCHIE. Yes.

Mr. KEEFER. So that since that came into effect the area of the lumbering operations has rather increased; you can cut more logs where you were prevented from cutting them before.

Mr. McRITCHIE. I guess that is right.

Mr. BERKMAN. On the other hand, in the conservation of timber in this country, if the restriction should again be raised to a certain sized timber, that would again cut it down. I do not suppose you are an expert on conservation?

Mr. McRITCHIE. No.

Mr. KEEFER. Has the spruce of this country been touched yet?

Mr. McRITCHIE. Some of the largest spruce.

Mr. KEEFER. But for the paper mill? You have no paper mills here?

Mr. McRITCHIE. No.

Mr. KEEFER. The nearest one is the Fort Frances mill?

Mr. McRITCHIE. Yes.

Mr. KEEFER. The spruce of this district is virgin spruce?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. They have been building and rebuilding mills here in recent years?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. Have there been any new lumber mills built here in recent years?

Mr. McRITCHIE. The lumber company have built a mill.

Mr. McLENNAN. That is one of the biggest concerns you have got?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. Built when?

Mr. McRITCHIE. I do not know when, but it was in recent years.

Mr. McLENNAN. In 1906, was it not?

Mr. POWELL. Can you not get at it from the mill men? This man is not an expert in these matters. I would not be influenced by his evidence, because he does not know.

Mr. McLENNAN. The Rat Portage Co. mill was burned and a better one rebuilt within a couple of years?

Mr. McRITCHIE. Yes.

Mr. McLENNAN. And there have been several tie mills built within the last few years; is that right?

Mr. McRITCHIE. Yes.

Mr. MAGRATH. There have been references made to the present level of the Lake of the Woods. Do you know what it is to-day, Mr. Scovil?

Mr. SCOVIL. 1,060.5.

Mr. ANDERSON. You might as well find out the highest level, I think, Mr. Magrath, when you are at it.

Mr. TAWNEY. What was the height at Warroad, Mr. Meyer?

Mr. MEYER. It was 1,060.6 when we were at Warroad, and the highest level at Warroad, according to the records, was a trifle less than 1,062.

Mr. ANDERSON. What was your recollection, Mr. Scovil, of the highest level of the lake here?

Mr. SCOVIL. I can not give you the exact record, but the highest level, I think, was 1,061.8.

TESTIMONY OF MATTHEW HICKEY.

(Matthew Hickey, having been duly sworn, testified as follows:)

Mr. McLENNAN. You are a steamboat captain on the Lake of the Woods?

Mr. HICKEY. Yes.

Mr. McLENNAN. Since what date?

Mr. HICKEY. 1891.

Mr. McLENNAN. What steamers have you been in charge of?

Mr. HICKEY. Oh, several; I can not tell you now, I change around so often.

Mr. McLENNAN. In 1911 what steamer were you in charge of?

Mr. HICKEY. The *Onaka*. I am not sure whether it was the *Onaka* or the *Shamrock*.

Mr. McLENNAN. Have you been captain on the *Mather*?

Mr. HICKEY. Yes; I was captain of the *Mather* last year.

Mr. McLENNAN. Do you know of any difficulty that the *Mather* had in Keewatin Bay?

Mr. HICKEY. When?

Mr. McLENNAN. At any time?

Mr. HICKEY. We had lots of difficulties; yes. She had trouble in several places between Rainy River and Keewatin in 1910 and 1911. In 1911 she could not get into the river at all, and she had trouble in the Keewatin Narrows.

Mr. McLENNAN. That is the northerly entrance to the Keewatin Channel?

Mr. HICKEY. Yes; and she could not get into the Keewatin Dock at all, into the harbor, and she used to strike every time she went into the coal dock.

Mr. McLENNAN. What is the draft of that vessel?

Mr. HICKEY. Well, she draws about 10 feet or 10½ feet. I guess you could trim her probably to 9 feet or 9 feet 10.

Mr. POWELL. How old is she?

Mr. HICKEY. About 7 years old—oh, she is older.

Mr. McLENNAN. Owned by the Keewatin Lumber Co.?

Mr. HICKEY. Yes; I guess probably she is 9 years old.

Mr. McLENNAN. What do you say as to the condition at Whitefish Narrows?

Mr. HICKEY. When; this year?

Mr. McLENNAN. Any year.

Mr. HICKEY. Well, when the water is low, with a boat like the *Mather*, I do not know how you would say it. I guess you will lose every time, that you can say, all the way from 12 hours to 48 hours. It all depends on the wind and current.

Mr. McLENNAN. At what condition of the water did you meet with that trouble?

Mr. HICKEY. Well, the conditions that there was in 1911.

Mr. McLENNAN. About what level of water would the trouble commence?

Mr. HICKEY. Well, I do not know what level of water; I suppose it would be about 3 feet lower than what it is now.

Mr. McLENNAN. And can you state whether you would have any further trouble than the delay in getting through there?

Mr. HICKEY. Well, we lost all kinds of logs; every time we had any trouble, it was not only the time we lost, we lost the logs.

Mr. McLENNAN. Have you any idea as to whether or not a large proportion of the timber that is manufactured at this end of the lake has to come through that channel?

Mr. HICKEY. Yes; I would say 75 per cent of the logs that are towed down here to this end of the lake come from Whitefish Bay now.

Mr. McLENNAN. Are there any other places in that bay, which I understand is a very large one, that give difficulty in getting out logs?

Mr. HICKEY. Yes; Sault Narrows is another bad place. In low water there is—well, some people call it a shoal and some people call it an island—right in the center.

Mr. McLENNAN. A shoal or an island?

Mr. HICKEY. Yes; in 1911 it was out of the water, I suppose, about 100 feet long and maybe 25 feet wide in the widest place, and the channel there was, I do not suppose, over 120 feet wide at the very best—that is, the whole channel—and then when it narrows up you have all kinds of trouble, your channel is so narrow that this—

Mr. McLENNAN. Did this reef come up somewhere near the middle of it?

Mr. HICKEY. Yes; pretty close to the center of it.

Mr. McLENNAN. Are there other points of difficulty?

Mr. HICKEY. Well, there is not any more, I do not think, than Capt. McRitchie told you of.

Mr. McLENNAN. Tell us about Painted Rock Narrows?

Mr. HICKEY. Well, I would say, at the other end of Painted Rock Narrows that the *Mather*—of course she went through it—it was a soft bottom, but she dragged all the way in 1911 several times.

Mr. McLENNAN. Is that on the rock channel?

Mr. HICKEY. That is on the town channel.

Mr. McLENNAN. Referring to the difficult places that have been spoken of, do they apply in theory to practically all of the channels leading into Kenora and Keewatin?

Mr. HICKEY. I think they do. There is one place on the Kenora Channel that a man running a towboat never goes, west of Big Island.

Mr. McLENNAN. Could you give up an estimate to what extent the cost of towing would be increased by reason of the difficulties you have to contend with in this way, we will say in waters such as 1911?

Mr. HICKEY. That would be pretty hard; I think the *Mather* broke two wheels in 1911; they cost about \$500 apiece, besides the loss of time and loss of logs. Another thing, the Keewatin Lumber Co. took out a rock in the channel going into Keewatin Harbor there and it cost them about \$600; they took a piece of it off in 1910 and went after it again and took another piece off it, and the logs will go over

it now, but if the water got very much lower, say 2 feet, they would not go over it.

Mr. GARDNER. Do you know anything about the amount of money invested in navigating this lake?

Mr. HICKEY. No.

Mr. GARDNER. You have no opinion about it?

Mr. HICKEY. I could tell you pretty near what the Keewatin Co.'s fleet cost.

Mr. GARDNER. What would that be?

Mr. HICKEY. The biggest boat they have over there, the *Mather*, I think cost about \$30,000, and the next one about \$16,000.

Mr. GARDNER. What is her name?

Mr. HICKEY. The *Onaka*; and the *John A. Minor*—that is the next one—I suppose about \$7,000; and they have three alligators; I think they cost about \$3,000 apiece or \$3,500. Well, that is all that I know anything about, so far as steamboats are concerned.

Mr. POWELL. Where did they use the alligators?

Mr. HICKEY. On the inland lakes mostly; sometimes they use them on the Lake of the Woods.

Mr. KEEFER. Do you know anything about the navigation below the dam here?

Mr. HICKEY. No.

Mr. POWELL. Do you know approximately the ages of the different vessels here?

Mr. HICKEY. Well, not the older ones; no.

Mr. McLENNAN. I will be able to give you a list of that later on.

Mr. KEEFER. Were you here navigating when the mines were operating?

Mr. HICKEY. I ran a boat to the Black Eagle mine part of one season.

Mr. KEEFER. What year was that?

Mr. HICKEY. I could not tell you for sure, but I think it was in 1902.

Mr. KEEFER. What means of access to any of these mining locations is there?

Mr. HICKEY. Nothing but steamboat on the lakes.

Mr. KEEFER. They are on the islands in the lake and on the main shore, are they?

Mr. HICKEY. Yes.

Mr. KEEFER. And the only way of getting at them at any reasonable cost is by water?

Mr. HICKEY. Yes.

Mr. KEEFER. Or over the ice in winter?

Mr. HICKEY. Yes.

Mr. KEEFER. What was the nature of the business in regard to the mining locations formerly in the way of navigation?

Mr. HICKEY. The mining business here a few years ago was quite a business. Most every mine had a boat of their own.

Mr. KEEFER. There was a number of mines here?

Mr. HICKEY. Yes.

Mr. KEEFER. They ran into a dozen or so?

Mr. HICKEY. Yes. The Black Eagle mine had a boat of their own, and did nothing else but carry their own ore.

Mr. TAWNEY. When the commission was here three years ago there was a desire expressed by the members that your board of trade collect statistics showing the amount of the investment in vessels, steamboat docks here at Kenora and the investments with respect to navigation interests; has that been done, do you know? Has a statement of that kind been prepared?

Mr. McLENNAN. I will have to ascertain from the secretary of the board of trade. I do not know that he is here.

Mr. TAWNEY. If it has not been done, I would suggest that the commission would like to have those statistics.

Mr. McLENNAN. I will get it for you.

Mr. TAWNEY. The commission will have to consider the relative importance of various interests that are involved in this investigation.

Mr. McLENNAN. I might say, of course, that the general aspect of those matters I expect to lay before you by some one later on.

Mr. TAWNEY. I wanted to inquire if the suggestion the commission made three years ago, that the statistics be obtained for presentation, had been carried out?

Mr. STEENERSON. I would like to know what an alligator is.

Mr. HICKEY. It is a machine for towing logs; it will portage itself.

Mr. STEENERSON. A boat?

Mr. HICKEY. It works with a cable.

Mr. STEENERSON. And a propeller?

Mr. HICKEY. Yes; sometimes they make them side wheels and sometimes they make them twin screw.

Mr. STEENERSON. Your company has three of them?

Mr. HICKEY. Yes.

Mr. STEENERSON. How much water would they draw?

Mr. HICKEY. About $3\frac{1}{2}$ feet, I think.

Mr. STEENERSON. About \$3,000 apiece?

Mr. HICKEY. Somewhere about that, I think.

Mr. McLENNAN. I understand that Capt. Johnson is here. He is interested in the fishing department. He requires to leave this afternoon for Oak Island and is anxious his evidence should be taken, if possible.

Mr. MAGRATH. Very well.

TESTIMONY OF ARTHUR JOHNSON.

(Arthur Johnson, having been duly sworn, testified as follows:)

Mr. McLENNAN. I do not know anything about the fishing proposition. I leave it to the witness. Will you make a statement? It was intimated you wished to get away.

Mr. JOHNSON. Yes. Mr. Chairman and gentlemen, I might say that I have been in the fishing business here in Kenora for 20 years and know practically about all the fish that came from this end of the lake. I have been manager of the Dominion Fish Co. and the Armstrong Trading Co., and, as regards the fishing industry and the high and the low water, I would say that the very high water is a detriment to the fishing industry. As to the water at the present time I am not conversant with the levels and the sea levels to give you the figures, but to-day, the water at the present stage we have got now, it would suit the fishing industry far better if it was a

foot lower than it is now; but a foot lower or a foot higher, if it did not fluctuate too much, the way it has done the last two years—the great trouble that has been a detriment to the fishing industry is the sudden fluctuation of the water—for one reason that the fish go into the marshes and it destroys the spawning grounds; the fish deposit their eggs and leave them there, and the water goes down and the rough fish go into the marshes in the fall, and the water freezes right to the mud, and there have been instances, in 1811 and 1912, when the water was very low, that the water went down through the winter; that there were millions of fish frozen in the mud and could not get up; and, as far as the pound-net fishing is concerned, a man has got to have his nets according to the depth of the water. He has to measure his water according to his needs, and if he has a 26-foot net for a certain place for the gauge of the water and the water raises 4 feet, that net is practically out of commission, or if it goes the other way; but if the water would fluctuate gradually a foot higher or a foot lower than what it is at the present day it would not be any injury in any shape or form to the fishing industry.

MR. TAWNEY. You have been in the fishing business for about 20 years?

MR. JOHNSON. Yes.

MR. TAWNEY. Are you acquainted with the value of the investment in the fishing industry on this side of the line?

MR. JOHNSON. Yes.

MR. TAWNEY. About how much money is invested in the fishing industry here and in the equipment necessary for carrying on that industry?

MR. JOHNSON. About \$150,000.

MR. MIGNAULT. On this side of the line?

MR. JOHNSON. On this side of the line.

MR. TAWNEY. Could you give us an idea of what this \$150,000 is invested in, so that we can form some judgment of it?

MR. JOHNSON. Yes. As near as I can from memory—I can not give you the figures exactly.

MR. TAWNEY. Approximately?

MR. JOHNSON. Approximately, it is invested in nets, boats, and docks.

MR. TAWNEY. How much in nets?

MR. JOHNSON. I should say in nets, at an approximate estimate, there is \$25,000 to \$30,000.

MR. TAWNEY. How much do you estimate to be invested in boats?

MR. JOHNSON. Well, about \$10,000—from \$10,000 to \$15,000.

MR. TAWNEY. And in docks?

MR. JOHNSON. You can not very well make an estimate of the docks, because some are temporary ones and some are permanent ones.

MR. TAWNEY. How much in buildings and fishing stations?

MR. JOHNSON. Well, it is hard to make an approximate estimate, but I have the figures at home in my house; I could not say offhand how it is.

MR. TAWNEY. Can you, before the commission leaves Kenora, furnish us with a detailed statement of the investment and the amount invested in the various departments of the business?

Mr. JOHNSON. Yes; I could look it up. How long will the commission sit?

Mr. TAWNEY. You can send it to the secretary any time if you get it.

Mr. JOHNSON. I will do so.

Mr. POWELL. What is the return from the industry per annum?

Mr. JOHNSON. The turnover on this end of the lake is about \$50,000 a year.

Mr. POWELL. Is that gross?

Mr. JOHNSON. No; that would not be the gross receipts; that is about the net—

Mr. POWELL. The net profit?

Mr. JOHNSON. No; it would not be the net profit; it would be the actual turnover, not the profits. The profits would possibly be \$10,000.

Mr. WYVELL. \$50,000 would be the gross sales?

Mr. JOHNSON. About that.

Mr. WYVELL. Can you tell the amount of wages paid annually for help?

Mr. JOHNSON. Yes; I could tell the amount, but to go into details—

Mr. WYVELL. The gross amount?

Mr. JOHNSON. The gross amount would be somewhere near upon \$25,000.

Mr. TAWNEY. What is the size of the catch? Does it aggregate about \$50,000?

Mr. JOHNSON. Yes.

Mr. TAWNEY. If you send us a statement, we will have it inserted in the record.

Mr. JOHNSON. I will.

Mr. KEEFER. You can give that with detail in respect of the different amounts of fish caught in the years 1910, 1911, and 1912, divided into whitefish, pickerel, and trout, and for the cheaper fish—bullheads, Buffalo sturgeon, and so on. I have the data here, but you can furnish it more accurately.

Mr. MAGRATH. Do those fish go through Kenora or Warroad?

Mr. JOHNSON. The biggest portion caught in the gill nets—the north end of the Lake of the Woods is operated by gill nets, and the south end of the Lake of the Woods, a big body of water, is operated by gill nets—and the biggest part of the catch that comes to this end of the lake is distributed to Montreal. They go to Montreal and Toronto, and what we do not dispose of in Canada we ship to the United States.

Mr. MIGNAULT. What proportion do you ship out of this place and what proportion out of Warroad?

Mr. JOHNSON. We ship the biggest portion out this way.

Mr. POWELL. To sum up your evidence, so far as the water is concerned, the chief thing is the range of level?

Mr. JOHNSON. Yes; it is immaterial as long as the big depreciations in water up and down do not occur.

Mr. POWELL. Uniformity is desirable?

Mr. JOHNSON. Yes; for the fish business; it is when the water falls and rises 4 feet and goes down inside of two months; it is certainly a detriment.

Mr. POWELL. How far back does your experience of the lake extend? You have been in the business 20 years?

Mr. JOHNSON. I have been here 20 years.

Mr. POWELL. And you have been in the business since then?

Mr. JOHNSON. Yes.

Mr. POWELL. Had you any previous acquaintance with the lake?

Mr. JOHNSON. No; not before that.

Mr. KEEFER. Speaking of this range of level, you don't want a drop in one year?

Mr. JOHNSON. No.

Mr. KEEFER. What about in the case of a dry season following another dry season? As long as you do not have a great big drop in one year—a drop of 2 feet in one year would not be detrimental?

Mr. JOHNSON. If it was a drop all inside of a year it would.

Mr. KEEFER. To stretch over two years it would not affect it?

Mr. JOHNSON. No.

Mr. KEEFER. Speaking of the range, you do not want a wide range in one year?

Mr. JOHNSON. No.

Mr. KEEFER. But if it is necessary to have a wide range extending over two or three years, as long as you do not have a drop of more than 1 foot in a year, it would not be such a detriment.

Mr. JOHNSON. No.

Mr. POWELL. How long do your nets last?

Mr. JOHNSON. The life of a pound net is three years.

Mr. POWELL. Longer than in salt water?

Mr. JOHNSON. Yes.

Mr. TAWNEY. And the life of a gill net?

Mr. JOHNSON. Just one season; we have to change them every season.

Mr. KEEFER. I understand the valuable fish, whitefish, trout, and pickerel, usually seek the deep water in summer time?

Mr. JOHNSON. Yes.

Mr. KEEFER. Deep water is no detriment to that?

Mr. JOHNSON. No.

Mr. KEEFER. What effect would the depositing of fry in a hatchery have upon the spawning?

Mr. JOHNSON. Well, it has considerable upon that. When you have the pound nets you have to get the fish for propagating purposes out of the pound net, and if that pound net—as I tried to explain and make myself clear—if that pound net is put there in a certain amount of water, and the water goes down or it goes up at the time that net is there, and the young fish is on where we get the permit to put the nets for the spawn, it is injurious.

Mr. TAWNEY. Is there located here a fish hatchery?

Mr. JOHNSON. Yes.

Mr. TAWNEY. Is it an expensive one?

Mr. JOHNSON. The Dominion Government built a fish hatchery here last year.

Mr. TAWNEY. What did it cost?

Mr. JOHNSON. It cost about \$60,000, and they had very good success, and would have had better success if it had not been for the exceptional year we had last year, owing to high water—very high water.

Mr. KEEFER. What would be the effect of the operation of the fish hatchery as regards the spawning beds?

Mr. JOHNSON. In what way?

Mr. KEEFER. In helping out the detrimental effect on the spawning bed of the sudden variation in one year.

Mr. JOHNSON. The hatchery will have a very great effect on keeping up the supply; but it is the trout and whitefish and the yellow pike that is the most particular; that is, the commercial fish, that have the most value, that they want to keep them replenished.

Mr. KEEFER. If I understand you aright, the variation in one year should not be more than 2 or 3 feet?

Mr. JOHNSON. It should not be more than 1 foot.

Mr. KEEFER. You can not hold them to that; it is impossible to do it, but the minimum of variation in one year is what you are advocating?

Mr. JOHNSON. Yes.

Mr. KEEFER. But you do not mind changing the next year?

Mr. JOHNSON. No.

Mr. POWELL. But involved in that is the importance of not having a change during the life of the nets; the nets would be simply thrown away.

Mr. KEEFER. Would that apply to the pound nets?

Mr. JOHNSON. Yes.

Mr. KEEFER. And not to the gill nets?

Mr. JOHNSON. No.

Mr. GARDNER. You say an extreme high level maintained through the year is detrimental to the fish?

Mr. JOHNSON. Yes. I could give you an explanation with regard to very high water. The marshes are all flooded; even the whitefish, pickerel, and trout—they inhabit these waters and do not come into the deep water—there appears to be more water, and they do not go into the deep-water ground until it is practically too late and the season is over. The whitefish and trout go any time for the deep water, where it is cold. They go down to get into the deeper water. This year, when the water is very high, they stay on the top longer than they do when the water is lower.

Mr. STEENERSON. The water last year was too high for the fish?

Mr. JOHNSON. It was at certain times of the year.

Mr. STEENERSON. When was that?

Mr. JOHNSON. It was last fall and early this spring; that is, from the opening up to about the middle of July.

Mr. STEENERSON. And that high water interfered with the success of the fisheries?

Mr. JOHNSON. Yes.

Mr. STEENERSON. And with the fish hatchery?

Mr. JOHNSON. Yes.

Mr. STEENERSON. And it would do so again?

Mr. JOHNSON. Yes.

Mr. STEENERSON. Whenever it happened?

Mr. JOHNSON. Yes; it would do so again; there is no question about that.

Mr. KEEFER. Is it possible for those hatcheries to wholly make up on the question of the injury to the spawning beds? Is it possible,

by using to the full capacity the hatcheries, that you could overcome the detrimental effect on the spawning beds?

Mr. JOHNSON. No; I do not think you could.

Mr. KEEFER. You could not do it altogether?

Mr. JOHNSON. No.

Mr. KEEFER. It would help out though?

Mr. JOHNSON. Yes; but the fish that is hatched out in its natural element is far stronger and there is more percentage of them comes to maturity than those raised by artificial spawning.

Mr. KEEFER. You will put in those details?

Mr. JOHNSON. Yes.

Mr. KEEFER. How would you arrive at the data to confirm your opinion? You may be correct, but the difficulty I see is in substantiating your opinion, because you have no way to identify the fish which come from the hatchery and which are born out in the lake?

Mr. JOHNSON. Oh, I don't know that you would unless you tagged them.

Mr. KEEFER. There is no way of telling?

Mr. JOHNSON. No; there is no definite way, but it is always supposed by those people in the business that more of them come to maturity naturally than by artificial spawning.

Mr. ANDERSON. Under natural conditions, from your experience, I suppose you know the water sometimes rises and falls and covers an extreme fluctuation?

Mr. JOHNSON. Yes.

Mr. ANDERSON. That is not desirable from your standpoint?

Mr. JOHNSON. No.

Mr. ANDERSON. As between natural conditions, which may occasion a wide fluctuation, and regulated conditions, which contain the water within a certain range, you would sooner have the regulated conditions?

Mr. JOHNSON. Yes.

Mr. STEENERSON. Would you like to have it as high as last year or higher?

Mr. JOHNSON. I do not know the figures, but the state of water as it is now, it would suit the fishing industry, either a foot lower or a foot higher.

Mr. STEENERSON. There is no reason why you should not expect just as high water as we have here from natural conditions?

Mr. JOHNSON. Oh, no; we have no control over that.

Mr. STEENERSON. But these dams were here before you came?

Mr. JOHNSON. Yes.

Mr. McLENNAN. A considerable rise of water is not serious, if it does not come till after May?

Mr. JOHNSON. If it does not come too sudden.

Mr. McLENNAN. If it does not come too suddenly and after May, it is not serious?

Mr. JOHNSON. No, sir.

Mr. McLENNAN. And that is the usual time the water does come up?

Mr. JOHNSON. Yes; when the water comes down here it rises from the middle of May, probably, to the 1st of June or 1st of July; but my experience has been, and I have always thought, that the water

that has come down, it is the spring rush that has come down; and what little experience I have had, or what little notice I have taken outside the fishing industries regarding the high and low water, I know this, that the logs are put in and taken out of that dam, and with a little more attention paid to it I think it would regulate the water.

Mr. STEENERSON. It is the spring rush that puts your nets out of condition?

Mr. JOHNSON. Yes.

Mr. KEEFER. Your details will show the valuable fish have been increasing in numbers each year?

Mr. JOHNSON. Yes; they have increased for the last five years.

Mr. KEEFER. 1910 greater than 1909, and 1911 greater than 1910?

Mr. JOHNSON. Since the sturgeon has gone out of the lake, the scale fish—that is, the pickerel, whitefish, and that class of fish—have increased almost 50 per cent.

Mr. STEENERSON. You think the sturgeon caused the destruction of the other fish?

Mr. JOHNSON. Yes.

Mr. STEENERSON. Why?

Mr. JOHNSON. The reason is that since the sturgeon has been taken out the other fish have increased.

Mr. STEENERSON. You think the sturgeon has eaten the spawn of other fish?

Mr. JOHNSON. Yes.

Mr. STEENERSON. Was the disappearance of the sturgeon due to more fishing, or what was it?

Mr. JOHNSON. No; there are no more nets in the lake—in fact, there is not as many.

TESTIMONY OF JAMES HENDERSON.

(James Henderson, having been duly sworn, testified as follows:)

Mr. McLENNAN. You are a steamboat captain on the Lake of the Woods?

Mr. HENDERSON. Yes.

Mr. McLENNAN. You are in command of the steamer *Verbana* this year?

Mr. HENDERSON. Yes.

Mr. McLENNAN. For the Lake of the Woods Milling Co?

Mr. HENDERSON. Yes.

Mr. McLENNAN. I understood you were through Ash Rapids to Shoal Lake?

Mr. HENDERSON. I was through on the 7th August and again on the 12th.

Mr. McLENNAN. What is the draft of your boat?

Mr. HENDERSON. Seven feet.

Mr. McLENNAN. And how did you find the water conditions there?

Mr. HENDERSON. Hardly enough to let her through. We pulled her up with a line, and the second time we had about 40 passengers on, and we put them all on the bow and got through without the aid of the line, and struck bottom quite heavy.

Mr. MAGRATH. When was that?

Mr. HENDERSON. Seventh August.

Mr. McLENNAN. Can you say as to whether there are fishing licenses operating up there?

Mr. HENDERSON. There are three outfits, I think; two I am positive of.

Mr. McLENNAN. Are there any mines operating in Shoal Lake?

Mr. HENDERSON. There are two mines operating there, with the prospect of another one starting.

Mr. McLENNAN. Is there any other industry there? Is there an Indian school out there?

Mr. HENDERSON. There is an Indian school, and the Winnipeg waterworks are there.

Mr. McLENNAN. That is, the construction operation is being carried on from this end?

Mr. HENDERSON. Yes; and one or two summer cottages.

Mr. McLENNAN. Can you tell us the depth in the Keewatin Narrows at the present time?

Mr. HENDERSON. A little less than 15 feet.

Mr. KEEFER. You speak of one or two mines opening up; what district is that in?

Mr. HENDERSON. Shoal Lake district.

Mr. KEEFER. Do you remember the former mining days here?

Mr. HENDERSON. Yes.

Mr. KEEFER. Did you do any navigation in connection with them?

Mr. HENDERSON. Yes.

Mr. KEEFER. Of what nature?

Mr. HENDERSON. I done a great deal of freight for the mines.

Mr. KEEFER. What would be the volume of business when the mines were operating by navigation?

Mr. HENDERSON. Very large at one time.

Mr. KEEFER. As a matter of fact, is not the mining industry of this district—the Lake of the Woods—absolutely dependent upon navigation to get in and out?

Mr. HENDERSON. Almost so.

Mr. KEEFER. That is, at a reasonable cost?

Mr. HENDERSON. Yes.

Mr. KEEFER. Do you remember the old Sultana mine?

Mr. HENDERSON. Yes.

Mr. KEEFER. Do you remember, roughly, what the production of gold was in that mine?

Mr. HENDERSON. No.

Mr. KEEFER. Approximately, in a general way?

Mr. HENDERSON. I could not say.

Mr. KEEFER. The Mikado?

Mr. HENDERSON. Or the Mikado, either.

Mr. KEEFER. They were large producing mines?

Mr. HENDERSON. Yes.

Mr. KEEFER. Employing 100 men?

Mr. HENDERSON. Yes.

Mr. KEEFER. Each of these mines had a boat of their own?

Mr. HENDERSON. Yes.

Mr. ANDERSON. Have you had experience in navigation between Warroad and Kenora?

Mr. HENDERSON. Not a great deal; I have been there several times, but my business does not take me that way.

Mr. ANDERSON. Do you know anything about the position between Garden Island, Big Island, and Driftwood Point?

Mr. HENDERSON. Yes. There is a bar runs out from Garden Island to Big Island.

Mr. ANDERSON. Does that affect the condition of the water?

Mr. HENDERSON. Well, at nights it is almost impossible to get through there.

Mr. ANDERSON. What do you advocate for navigation, so far as levels are concerned? Do you want high or low water?

Mr. HENDERSON. High water.

Mr. ANDERSON. How, compared with the level this year?

Mr. HENDERSON. The present level or a little higher.

Mr. ANDERSON. You say you worked for the Lake of the Woods Milling Co.?

Mr. HENDERSON. I have for 11 years.

Mr. ANDERSON. How have they navigated?

Mr. HENDERSON. They have a large barrel-manufacturing industry.

Mr. ANDERSON. Large barrel-manufacturing industry?

Mr. HENDERSON. Yes; they manufacture about 250,000 barrels every year.

Mr. ANDERSON. How does that depend upon navigation?

Mr. HENDERSON. It depends entirely on navigation. The logs from which they manufacture the barrels have to come in from the lakes.

Mr. ANDERSON. What fleet do they utilize in connection with their business?

Mr. HENDERSON. Just the one tug.

Mr. ANDERSON. And how about getting the lumber from the logs at the other end? Are there many people engaged in that work?

Mr. HENDERSON. Our company usually has one camp; some winters two camps.

Mr. ANDERSON. Do you know how much money is invested in that industry?

Mr. HENDERSON. About \$95,000 in plant and equipment.

Mr. ANDERSON. Do you know anything about the Maple Leaf Milling Co., what they do?

Mr. HENDERSON. No; they have no plant depending on the Lake of the Woods, so far as I know.

Mr. ANDERSON. Do you know anything about the Lake of the Woods Milling plant at Rainy River?

Mr. HENDERSON. They have a plant there.

Mr. ANDERSON. Do you know anything about the capacity of it?

Mr. HENDERSON. No; I do not.

Mr. STEENERSON. How long since that Sultana and Mikado mines were in operation?

Mr. HENDERSON. It must be about 12 years.

Mr. STEENERSON. How long since they started?

Mr. HENDERSON. About 24 years since the Sultana was first opened.

Mr. STEENERSON. They had their own boats?

Mr. HENDERSON. Yes.

Mr. STEENERSON. What was the draft?

Mr. HENDERSON. Their boat was small, about 4 feet.

Mr. STEENERSON. And the other mine had a tug?

Mr. HENDERSON. Yes; they had a tug drawing $6\frac{1}{2}$ feet.

Mr. STEENERSON. They had no difficulty in navigating the water?

Mr. HENDERSON. No; not very much at that time; no.

TESTIMONY OF FRED MONGRAI.

(Fred Mongrai, having been duly sworn, testified as follows:)

Mr. McLENNAN. How long have you been a steamboat captain on the Lake of the Woods?

Mr. MONGRAI. Since 1891.

Mr. McLENNAN. For the Rat Portage Lumber Co.?

Mr. MONGRAI. Not altogether. I started with the Eminol Co. first, and then the Fish Co., and then the Rat Portage Lumber Co.

Mr. McLENNAN. What is your idea as to the best water levels on the lake for navigation purposes?

Mr. MONGRAI. Well, there is never too much.

Mr. McLENNAN. You sometimes have too little?

Mr. MONGRAI. We often have too little.

Mr. McLENNAN. Will you tell us what level of water will give you trouble?

Mr. MONGRAI. Well, in 1911, when it was $3\frac{1}{2}$ feet lower than it is now, it gave us a good deal of trouble in many places.

Mr. McLENNAN. Tell us the difficulties you had to contend with at that time.

Mr. MONGRAI. At that time we were taking the logs, and there are hundreds of reefs that stick up out of the water, and we have either to get around them or get on top of them and get tangled up and have a whole lot of trouble.

Mr. McLENNAN. What places does that apply to? What places do you find that difficulty?

Mr. MONGRAI. Several places.

Mr. McLENNAN. Mention them.

Mr. MONGRAI. Bishops Bay, St. Davids Rock, and one or two other places; Keewatin Channel another one, and up on the Whitefish Narrows. That was one of the particular places.

Mr. POWELL. He has heard the other testimony. Can you not generalize?

Mr. McLENNAN. Do those comprise all the channels?

Mr. MONGRAI. They are the two channels we tow on.

Mr. McLENNAN. That is, that all the timber that comes into Kenora and Keewatin mills has to be brought over?

Mr. MONGRAI. The majority of it. There are small portions on this side of it.

Mr. McLENNAN. You have heard the testimony of the other witnesses as to the difficulty?

Mr. MONGRAI. Yes.

Mr. McLENNAN. What have you to say as to what has already been said?

Mr. MONGRAI. Pretty much the same thing.

Mr. McLENNAN. What would you say to the present state of the water?

Mr. MONGRAI. It is very fair just now.

Mr. McLENNAN. You think you would get along all right now?

Mr. MONGRAI. Yes.

Mr. McLENNAN. How much lower do you think you could magage with?

Mr. MONGRAI. Well, every inch will count from this out unless it gets 6 inches lower than what it is now, then a few of those things will stick up and they will be in the way.

Mr. STEENERSON. It will be a good thing, because you can see them.

Mr. MONGRAI. I have often thought if I could not see them at all I would be better off.

Mr. STEENERSON. Don't you avoid them better when they are visible than when they are under water?

Mr. MONGRAI. We can do that with the boats, but we want to float the logs over these reefs.

Mr. STEENERSON. A little care would bring the logs around them; it did in 1911?

Mr. MONGRAI. Sometimes, when there ain't much wind.

Mr. ANDERSON. There are reefs and reefs; there are some near the top and some down at the bottom?

Mr. MONGRAI. Yes; some that we never see.

Mr. ANDERSON. And the ones that are nearer the bottom come nearer the top when the water goes down?

Mr. MONGRAI. Yes.

Mr. ANDERSON. Those are the ones that are troublesome?

Mr. MONGRAI. Yes; those are the ones that give us trouble.

Mr. ANDERSON. How many steamboats have the Rat Portage Lumber Co. in use here?

Mr. MONGRAI. At present they have three.

Mr. ANDERSON. How many have they altogether?

Mr. MONGRAI. They used to have at one time five in operation.

Mr. ANDERSON. But just now they are only operating three?

Mr. MONGRAI. There is only one in operation now; they have three here yet.

Mr. ANDERSON. They have three here yet?

Mr. MONGRAI. Yes.

Mr. ANDERSON. When were the three operating?

Mr. MONGRAI. Last year.

Mr. ANDERSON. Why are you not operating more this year?

Mr. MONGRAI. I guess the idea was that there was not so many logs getting out last winter.

Mr. ANDERSON. Why is that? Because the demand for lumber is not so great?

Mr. MONGRAI. I understand that is it.

Mr. STEENERSON. What is the draft of those boats?

Mr. MONGRAI. The one I was working on was $9\frac{1}{2}$ feet, and another one 7 feet, and another one about 8 feet, and another one about 5.

Mr. POWELL. There is one in the shipping list at 11.

Mr. ANDERSON. Which is the more economical to operate, the heavy draft or the light draft?

Mr. MONGRAI. As far as the running is concerned, the light draft is more economical, but won't do so much work.

Mr. ANDERSON. Supposing you have water to operate in, which would you rather have?

Mr. MONGRAI. I would rather have the heavy draft; I would do more work.

Mr. POWELL. That is, the propeller has a greater hold of the water?

Mr. MONGRAI. Yes; larger size.

Mr. ANDERSON. And do more work in proportion to the amount of money invested?

Mr. MONGRAI. Yes.

Mr. POWELL. Is there much difference in the draft of these steamers forward and aft?

Mr. MONGRAI. No.

Mr. POWELL. They draw pretty near as much water forward as they do aft?

Mr. MONGRAI. In burning wood, we carry almost all the wood in the bow, and when the fuel goes out they go down by the stern.

Mr. McLENNAN. I produce the statement which I promised.

(Statement received and marked "Exhibit R.")

TESTIMONY OF DONALD McLEOD.

(Donald McLeod, having been duly sworn, testified as follows:)

Mr. McLENNAN. You are the manager of the Keewatin Lumber Co.?

Mr. McLEOD. Yes.

Mr. McLENNAN. And you are operating a sawmill within the town of Kenora?

Mr. McLEOD. Yes; sawmill and tie mill.

Mr. McLENNAN. And when were those erected?

Mr. McLEOD. Well, the tie mill was erected in 1904 and 1905, and the sawmill in 1906.

Mr. McLENNAN. Can you tell us the capacity of those mills?

Mr. McLEOD. Of course, the tie mill depends on the length of the season; her capacity is about 5,000 tons in 10 hours.

Mr. POWELL. Is that the usual product?

Mr. McLEOD. When we are running, but we only run when we have a sale for ties, and the sawmill has a capacity of about 30,000,000.

Mr. POWELL. Is that her average product?

Mr. McLEOD. It has been up to this year and last year.

Mr. McLENNAN. Tell us about the slacking off for the last year or two.

Mr. McLEOD. Well, it depended partly on the crop and on account of the war situation.

Mr. McLENNAN. It was a matter of general financial conditions; it is not a matter of shortage of timber?

Mr. McLEOD. Oh, no.

Mr. McLENNAN. And the same applies to the railway ties?

Mr. McLEOD. Yes.

Mr. McLENNAN. So that this year is a slack year?

Mr. McLEOD. Yes.

Mr. McLENNAN. But your tie mill, I understood you to say, had a capacity of how many for 10 hours?

Mr. McLEOD. Five thousand; in fact, we have had 5,800.

Mr. McLENNAN. You have been engaged in the lumbering business one way and another since what year?

Mr. McLEOD. 1884.

Mr. POWELL. Ask him where the distribution is, and how it goes from these mills.

Mr. McLENNAN. Can you just tell us that?

Mr. McLEOD. The large part of it goes west; Manitoba and Saskatchewan.

Mr. POWELL. Is it all shipped by water?

Mr. McLEOD. All by rail.

Mr. POWELL. The raw material all comes in by water?

Mr. McLEOD. Practically all.

Mr. POWELL. On the Lake of the Woods?

Mr. McLEOD. Yes.

Mr. POWELL. Could you not get a supply in other quarters than quarters that you must reach by water?

Mr. McLEOD. No, there is no railroad to supply us; we get what we can that way, but it is a very limited quantity.

Mr. POWELL. What is the total value of your capital invested?

Mr. McLEOD. Well, about \$750,000.

Mr. POWELL. And that is dependent, do you say, on the navigation here ultimately?

Mr. McLEOD. Well, just what does your question mean?

Mr. POWELL. If you had no navigation—

Mr. McLEOD. Certainly; if we had no navigation we could not operate.

Mr. McLENNAN. You could not operate?

Mr. McLEOD. We could not get anything to the mill.

Mr. McLENNAN. Will you state to the commission what interest you have in the level of the water of the Lake of the Woods, in connection with your lumbering operations?

Mr. McLEOD. Well, it is—as you have heard it from the steam-boat captains—that we are anxious, in fact we are obliged, to do our work in every department of business at as little cost as possible; in fact, for several years, recently, we have not been doing it at a low enough cost to make any profit, and during 1911, of which I had the figures, our towing cost increased 25 per cent, and during 1912 15 per cent over the previous years.

Mr. McLENNAN. From what cause?

Mr. McLEOD. Very low water, caused partly by the boat that we had, that we owned, being too deep draft to navigate certain parts of the lake, and the Rainy River, as well.

Mr. POWELL. What is the value of your output from your sawmill industry of manufactured lumber, exclusive of the ties?

Mr. McLEOD. About \$525,000 to \$550,000.

Mr. POWELL. What is the value of your tie output?

Mr. McLEOD. I would not say offhand; it varies from 200,000 to 500,000 ties; those probably average 40 cents each and a little more.

Mr. POWELL. That would be up as high as \$200,000 a year?

Mr. McLEOD. We have sold as high as \$280,000 worth of ties a year.

Mr. POWELL. So that the combined industry would amount to about how much?

Mr. McLEOD. Well, the average over the time we have been operating would amount to about \$625,000.

Mr. McLENNAN. You have stated some of the difficulties of 1911; that is, that you could not get into Rainy River, and so on. Can you give us any further particulars?

Mr. McLEOD. Well, in connection, of course, with the sawmill, which is in Keewatin Bay—the mill is located in Kenora, across the bay—at the time we built in 1906 we had about 4 feet of water, and there was considerable discussion at that time as to whether we would be safe in placing the mill there, and it was decided that as for 18 or 20 years the water had never gone any lower we would be safe in placing the mill at that point. In 1911, we found that we had to shut down our plant and make a dredge, a homemade affair, and dredge out to the log heap a channel of about 12 feet wide, and employ six or seven extra men for this work, to get to the sawmill, and about three to get to the tie mill, and consequently the log pond cost for that year increased 100 per cent, and the next year the water was low again in the early part of the year, and the increase was about 7 per cent.

Mr. McLENNAN. Can you give the commission an estimate of the increased cost of towing?

Mr. McLEOD. I gave that.

Mr. POWELL. Have you a monopoly of the lumber business here?

Mr. McLEOD. No.

Mr. POWELL. Or are there others engaged in it?

Mr. McLEOD. The Rat Portage Lumber Co. are in the lumber business, and there is another company that have a tie mill, and there are two other mills.

Mr. TAWNEY. Is your mill operated by steam?

Mr. McLEOD. Yes.

Mr. TAWNEY. Are the other mills operated by steam?

Mr. McLEOD. All except one; one is run by electricity.

Mr. POWELL. Are you going to give evidence of the products of the other mills?

Mr. McLENNAN. I expect to.

Mr. TAWNEY. How many feet do you cut a year in your mill?

Mr. McLEOD. Thirty million feet.

Mr. McLENNAN. Apart from the difficulties of getting your logs in that you have stated, did you have any other difficulties?

Mr. McLEOD. Well, of course, the loss of logs in many cases—of course we also had the loss by the steamboat—waiting for the smaller boats to bring the tows from the bridge at Rainy River down to the lower end here, and also bring the tows out of the Grassy River.

Mr. McLENNAN. Did you get all your logs in?

Mr. McLEOD. No; we left two tows at the Rainy River that year, but we got all of the others that we were able to get into the Lake of the Woods.

Mr. McLENNAN. Were there any others that you were unable to get by reason of this?

Mr. McLEOD. No.

Mr. GARDNER. Were those delays you speak of in consequence of not getting your logs out of Rainy River always occasioned by low water?

Mr. McLEOD. Yes. I have a book which shows those delays but I have not it here.

Mr. KEEFER. Are you connected with the board of trade?

Mr. McLEOD. Yes.

Mr. KEEFER. A member?

Mr. McLEOD. Yes; a member.

Mr. KEEFER. Don't you think you could get your board of trade to tabulate, if it has not yet been done, some of the data the members have been asking for, the value of the boats here, and the value of the docks, and different things of that nature?

Mr. McLEOD. I think so.

Mr. KEEFER. Who would be the best one to do that? Yourself, if you would undertake it, I should say.

Mr. McLEOD. I would undertake it; yes.

Mr. KEEFER. And furnish it to this commission?

Mr. McLEOD. Yes.

Mr. KEEFER. It will be satisfactory for him to put this statement in, I suppose?

Mr. TAWNEY. Yes.

Mr. McLEOD. What data would you want?

Mr. KEEFER. They would want the total value of the fleet of boats here, other than the tourist gasolines—we will have that separately.

Mr. POWELL. Gentlemen on the other side might not object to this, but I think they ought to have the privilege in some way of cross-examining. They had better be here in the morning.

Mr. STEENERSON. I would like to cross-examine him on what he has gone over.

Mr. McLEOD. Do you expect me to furnish this before to-morrow?

Mr. KEEFER. I expect you might. Now, as to the value of the boating industry and the gasoline launches, and the value of the docks at Kenora, we have some of those data, I think. I think I have that all worked out. I suppose the value of these different industries is an important thing?

Mr. POWELL. The authority given to us authorizes us—that means, it commands us—to inquire into the different industries. Take the shipping industry. I fancy counsel would like to know as to the values of the different items. It is very easy to put a large valuation on a ship.

Mr. KEEFER. I can furnish a complete list of the boats.

Mr. MIGNAULT. Could you not have all that data given to us as part of the deposition of the witness?

Mr. KEEFER. Yes.

Mr. MIGNAULT. That would give an opportunity to the other side to cross-examine now.

Mr. KEEFER. Do you mean to give the details now?

Mr. MIGNAULT. As far as possible.

Mr. KEEFER. We will try to do it. What, roughly speaking, would you say is the total value of the fleet here, outside of the pleasure boats?

Mr. McLEOD. Oh, I could not say.

Mr. TAWNEY. It will take some time to give an estimate. The commission is taking into consideration the relative importance of interests on both sides of the line, and if they want the commission to consider the importance of the interests represented at Kenora, they will have to present it to us.

Mr. MIGNAULT. And the other side will have the right to cross-examine.

Mr. TAWNEY. Yes. It was stated three years ago that the commission required this information, and we have not received it yet.

Mr. POWELL. We gave due notice of all this.

Mr. KEEFER. Speaking of this feature of the pulp-wood industry here, has it been touched at all yet?

Mr. McLEOD. Yes.

Mr. KEEFER. What have you to say regarding the pulp-wood district here, roughly speaking?

Mr. McLEOD. Well, I do not just understand you.

Mr. KEEFER. Is it of importance?

Mr. McLEOD. We think so. We are under contract with the Ontario government to erect a mill to develop 100 tons a day.

Mr. TAWNEY. What is the area of the pulp wood?

Mr. McLEOD. We have not had it estimated. Our lease covers an area of 18 square miles.

Mr. POWELL. Are you depleting it rapidly by taking 30,000,000 feet off it?

Mr. McLEOD. This is pulp wood.

Mr. KEEFER. It has not been touched?

Mr. McLEOD. Well, no; except the larger spruce has been taken off.

Mr. KEEFER. You are under contract to erect a mill for 100 tons a day?

Mr. McLEOD. Yes.

Mr. KEEFER. Roughly speaking, that investment will run into what?

Mr. McLEOD. I could not say.

Mr. KEEFER. Will you be dependent upon navigation to get a supply to your mill?

Mr. McLEOD. Most of it will come by water.

Mr. KEEFER. Name any of the industries that are dependent upon water.

Mr. McLEOD. The Rat Portage Lumber Co. and the tie mill, and the company with the barrel factory.

Mr. KEEFER. How does the output of lumber in tonnage compare with former years?

Mr. McLEOD. I should think that, taking the ties as well, that there is considerably more manufactured, not this year, but in 1913 and for the previous five or six years, than there was when there were six of seven sawmills operating.

Mr. KEEFER. So that fewer mills are producing more manufactured product?

Mr. McLEOD. Well, there are about the same number of mills when you take the—

Mr. KEEFER. When you are speaking of last year and this year, I take it for granted the war has affected the business very much.

Mr. McLEOD. Yes.

Mr. GARDNER. Affected the demand?

Mr. McLEOD. Yes.

Mr. POWELL. You are acquainted with the lumber business pretty thoroughly, considering your output. Is there not somewhere that we can get an estimate by the Government of the amount of lumber there is on these islands here which must go by water?

Mr. McLEOD. I do not think they have any estimate of the islands; in fact, most of the estimates are by private parties, and the islands, except one or two, are not included in any timberlands at the present time.

Mr. POWELL. Is there any estimate of the public lands in the department?

Mr. McLEOD. I do not think so.

Mr. POWELL. We are simply going it blind unless we get the information.

Mr. McLEOD. Regarding Mr. Powell's question, I may state that we have a sufficient quantity of timber to run our sawmill 10 years, and the Ontario government has agreed to supply us with sufficient quantity for the pulpwood mill for 21 years. That is as far as I can give you on the amount of timber—

Mr. POWELL. Is it growthy land?

Mr. McLEOD. It is rough land.

Mr. POWELL. How long a period elapses after you cut it before you can go over it again. Ten or fifteen years?

Mr. McLEOD. Considerably more than that, although there has been some places cut over here; but you would not consider the growth had been great enough to give a second cut, because the second time they took smaller stuff than the first cutting.

Mr. POWELL. The first cut practically exhausts it?

Mr. McLEOD. No, not if the fire is kept out; but it exhausts it for a few years.

Mr. POWELL. For how many years?

Mr. McLEOD. Well, the way it has been cut at the present time, I should think 40 or 50 years; they cut it pretty close.

Mr. GARDNER. You are referring especially to spruce and pine?

Mr. McLEOD. Yes.

Mr. POWELL. What is your limitation at the butt?

Mr. McLEOD. At the butt, for pulpwood, 7 inches, and for saw logs, 9 inches.

Mr. POWELL. How do you distinguish between the pulp and saw log?

Mr. McLEOD. That is something we have to find out.

Mr. POWELL. In some cases they take for pulpwood stunted timber.

Mr. McLEOD. Well, we want a fair growth.

Mr. POWELL. You have no way of distinguishing what you call a pulp log?

Mr. McLEOD. The size would be the only thing. If it is more valuable as lumber, we would cut it into lumber.

Mr. POWELL. They allow you to slaughter the timber here as you please?

Mr. McLEOD. Well, 7 inches in diameter, as far as pulp is concerned.

Mr. KEEFER. I want you to consider a moment the tourist business that comes in during the summer months on these islands and give us some idea of the nature of that. First of all, for what distance away from Rat Portage do they locate on the islands?

Mr. McLEOD. I should judge it would be 8 or 9 miles.

Mr. KEEFER. Can you give us some idea of the number of cottages that are scattered through the islands?

Mr. McLEOD. I have no idea.

Mr. KEEFER. They would be dependent on the navigation to the islands?

Mr. McLEOD. Well, yes; there are some on the mainland.

Mr. KEEFER. Do they keep their own launches or depend upon ferries?

Mr. McLEOD. They mostly have their own launches.

Mr. KEEFER. Do you have ferries?

Mr. McLEOD. Not to the islands. There are some boathouses run launches to the islands, I believe.

Mr. KEEFER. Can you give these gentlemen some idea of the extent of that business?

Mr. McLEOD. No.

Mr. KEEFER. The number of people?

Mr. McLEOD. I have no idea; it is hard to form an opinion; it is quite a large business.

Mr. KEEFER. Is it 100 or 1,000 or what?

Mr. McLEOD. I should say 500 or 600 people coming this year, or maybe more.

Mr. KEEFER. When you say 500 or 600 people, do you mean individuals or different families.

Mr. McLEOD. I would not mean that many houses; that would be adults, I should say.

Mr. KEEFER. Are there 500 or 600 houses?

Mr. McLEOD. There may be.

Mr. ANDERSON. How does the plant of the Rat Portage Lumber Co. compare, in amount of investment, with your investment?

Mr. McLEOD. Something similar. When I made the statement about capital invested it was the plant; the plant cost about \$300,000.

Mr. ANDERSON. And do you think the Rat Portage Lumber Co. have a plant costing about as much?

Mr. McLEOD. I should judge so.

Mr. ANDERSON. There are two other plants that you speak of; they are similar ones.

Mr. McLEOD. Yes.

Mr. ANDERSON. About how much would they each represent?

Mr. McLEOD. I could not say; probably \$60,000 each; it might be; I would not be sure.

Mr. ANDERSON. You say your company is under contract with the Ontario Government with reference to the erection of this pulp mill?

Mr. McLEOD. Yes.

Mr. ANDERSON. How much money does that contract provide to be spent in the erection of a pulp mill?

Mr. McLEOD. It is either four or five hundred thousand dollars.

Mr. ANDERSON. Could you get a copy of that contract, Mr. Keefer, and file it?

Mr. KEEFER. I will.

Mr. ROCKWOOD. I might explain. I expect to go into that subject fully when the question of power is before the commission at a future hearing and I will reserve it for then. I will have that full information.

Mr. POWELL. This has a bearing on the matter of the industries.

Mr. ROCKWOOD. The notice said the power question would not be considered and this is a question of developing and using the power for the production of pulp.

Mr. TAWNEY. Your pulp mill will be operated by water power?

Mr. ROCKWOOD. Yes.

Mr. TAWNEY. That would come in under the water power question, but these other questions are not dependent upon water power.

Mr. POWELL. Are you going to operate the pulp mill by water?

Mr. McLEOD. Yes, by water.

Mr. MIGNAULT. The pulp mill will be here?

Mr. McLEOD. Yes, at the Norman dam.

Mr. POWELL. How much lumber are you under contract to consume?

Mr. McLEOD. One hundred tons per day.

Mr. POWELL. Throughout the whole year?

Mr. McLEOD. Well, I forget just the exact terms; there are a few days' grace, but not very much.

Mr. GARDNER. How long before you are to have the plant ready for operation?

Mr. McLEOD. It depends on the political atmosphere.

Mr. GARDNER. There is a qualification in your contract from the Province?

Mr. McLEOD. We have been obliged to ask for an extension.

Mr. POWELL. In seven months that would consume 21,000,000 feet of spruce?

Mr. McLEOD. You are figuring how many cords.

Mr. POWELL. It takes 1,200 superficial feet of pulp to make 1 ton of dry pulp; is yours going to be dry?

Mr. McLEOD. There is nothing specified; I presume it will be wet.

Mr. POWELL. Is yours going to be ground wood?

Mr. McLEOD. Yes.

Mr. POWELL. Altogether?

Mr. McLEOD. Yes.

Mr. POWELL. Not going to introduce any chemical plant?

Mr. McLEOD. We have not decided that yet; that may come later.

Mr. POWELL. It will take a terrific amount of power?

Mr. ANDERSON. In view of what was said by Mr. Rockwood, I will not pursue the pulp end of it, but the figures you gave me for the Rat Portage Co. and the other two were for the plant and did not include anything in the nature of an investment for timber limits?

Mr. McLEOD. No.

Mr. ANDERSON. That, of course, would be additional, and you are not in a position to speak, as to the value of the timber limits held by the other companies?

Mr. McLEOD. No.

Mr. ANDERSON. You said, I think, that last year you were unable to get out all your logs on account of the water?

Mr. McLEOD. In 1911; I did not state that we were unable to get them out; we were unable to get part of the logs out of the interior lakes, but any we got from the Lake of the Woods we were able to get.

Mr. ANDERSON. But from the interior lakes you were not able to get them all out?

Mr. McLEOD. No.

Mr. ANDERSON. I suppose this applied to other companies operating in the same way?

Mr. McLEOD. I suppose other companies had their logs stuck in the Lake of the Woods.

Mr. ANDERSON. Owing to the shallowness of the water?

Mr. McLEOD. Yes.

Mr. STEENERSON. You have been acquainted with the Lake of the Woods since 1884?

Mr. McLEOD. 1883.

Mr. STEENERSON. There was navigation on the lake then?

Mr. McLEOD. Yes.

Mr. STEENERSON. Were there mills here then?

Mr. McLEOD. Yes.

Mr. STEENERSON. How many?

Mr. McLEOD. I think there were two, and two in Keewatin.

Mr. STEENERSON. Large mills?

Mr. McLEOD. Fair-sized mills.

Mr. STEENERSON. Do you know how much they manufactured?

Mr. McLEOD. These two mills manufactured about seventeen million.

Mr. STEENERSON. And they navigated the lake?

Mr. McLEOD. Yes.

Mr. STEENERSON. And that was 1883, 1884, 1885, 1886, and 1887, before the dam was built?

Mr. McLEOD. Yes. One of those years, I do not remember which one, the mills of Keewatin were operated by water power, and they were unable to run anywhere near the full capacity; in fact, the Keewatin mill was able to operate only one-half of it, and that only through a part of the day.

Mr. STEENERSON. I thought they did not have any dam. I am speaking of the time before they had the dam. What was the power before they had the dam?

Mr. McLEOD. We had water power, and, as I told you, during one of the years you mention the power was very much limited, only half of the mill was operated, and that only for a part of the day—not over two hours—

Mr. STEENERSON. I did not suppose you had any water power before the dam was built?

Mr. McLEOD. We had some.

Mr. STEENERSON. It was the natural fall, then?

Mr. McLEOD. Certainly.

Mr. TAWNEY. State how you got the power—how you utilized the water power without the dam?

Mr. McLEOD. Of course, we would have power, anyway. This case that I mention was not natural; they were cuts through the rock to the Winnipeg River.

Mr. TAWNEY. They were cuts through the natural dam?

Mr. McLEOD. Yes.

Mr. TAWNEY. To run on to the wheel?

Mr. McLEOD. Yes.

Mr. STEENERSON. So that you had a mill running by water power in 1883?

Mr. McLEOD. Yes; two of them.

Mr. TAWNEY. There was a flour mill operated there at that time?

Mr. McLEOD. 1886, I think.

Mr. TAWNEY. And the lake was navigated in the same way in 1887 and 1888?

Mr. McLEOD. Yes.

Mr. TAWNEY. And it has been navigated all the time since you have been here?

Mr. McLEOD. Yes.

Mr. TAWNEY. Now, you spoke about the cost of towing having increased in 1911 by 25 per cent?

Mr. McLEOD. Yes.

Mr. TAWNEY. What was the cost of towing per thousand?

Mr. McLEOD. About 60 cents.

Mr. TAWNEY. So that that would be 15 cents per thousand?

Mr. McLEOD. Yes.

Mr. TAWNEY. And you said that the log pond cost was increased 100 per cent?

Mr. TAWNEY. What was the long-pond cost?

Mr. McLEOD. Nearly 15 cents.

Mr. TAWNEY. So that that would be 15 cents per thousand feet?

Mr. McLEOD. Yes.

Mr. TAWNEY. You said in that year you had to wait up by the sand bar at the mouth of the Rainy River?

Mr. McLEOD. Yes.

Mr. TAWNEY. Do you know where the sand hill was at the mouth of the Rainy River, right near to the Four Mile Point?

Mr. McLEOD. Yes.

Mr. TAWNEY. That was not available at that time?

Mr. McLEOD. No.

Mr. TAWNEY. How many years has that been filled so that it could not be used for navigation?

Mr. McLEOD. I do not know; it is some considerable number of years since we were able to go in; we got in three times, I think, during 1906, 1907, and 1908.

Mr. TAWNEY. Not since then?

Mr. McLEOD. Since 1911 we have been able to tow there any time—since the fall of 1912.

Mr. TAWNEY. You were not able to tow there at all?

Mr. McLEOD. We have been able to tow.

Mr. TAWNEY. In the old channel?

Mr. McLEOD. Oh, no.

Mr. TAWNEY. How long has the old channel been out of use?

Mr. McLEOD. I do not know.

Mr. TAWNEY. For seven or eight years?

Mr. McLEOD. Yes; unless the work they did on it last year opened it up.

Mr. TAWNEY. They did not do any work by the old channel, but the work was done by the island, a mile or so east?

Mr. McLEOD. I do not know of that.

Mr. TAWNEY. Are you familiar with that part of the river since 1911?

Mr. McLEOD. Well, I have been up there several times.

Mr. TAWNEY. The usual course for five or six years has been to go over there by these islands behind the hills?

Mr. McLEOD. Yes.

Mr. TAWNEY. More than a mile away from the old channel?

Mr. McLEOD. Because we could not get out.

Mr. TAWNEY. The other one was silted practically full of sand, and you have noticed that there has been dredging over beyond those islands?

Mr. McLEOD. Yes.

Mr. TAWNEY. For several years?

Mr. McLEOD. Yes; last year, I understand, they were dredging at the old channel.

Mr. TAWNEY. But there has been dredging over this for four or five years past?

Mr. McLEOD. Yes.

Mr. TAWNEY. And still you were laid up there and had to wait over by the island?

Mr. McLEOD. Yes.

Mr. TAWNEY. It was not deep enough?

Mr. McLEOD. It was not deep enough in spots; there were some spots had to be dredged.

Mr. TAWNEY. As a result it was not deep enough for your boat in to Rainy River?

Mr. McLEOD. No.

Mr. TAWNEY. How was it in 1913?

Mr. McLEOD. We got in in the fall of the year.

Mr. TAWNEY. But not earlier?

Mr. McLEOD. No.

Mr. TAWNEY. And how was it in 1913?

Mr. McLEOD. All right.

Mr. TAWNEY. You could get up Rainy River at all times that season?

Mr. McLEOD. Yes; with some trouble, of course, each year.

Mr. TAWNEY. What has been the price of lumber per thousand here for the last five or six years? You can give the range, I suppose?

Mr. McLEOD. You mean the average price of lumber?

Mr. TAWNEY. Yes.

Mr. McLEOD. I could not say.

Mr. TAWNEY. What is it this year?

Mr. McLEOD. I have the figures and can supply them if it is necessary.

Mr. TAWNEY. Well, give it as near as you can.

Mr. McLEOD. It is between eighteen and nineteen dollars.

Mr. TAWNEY. Per thousand feet?

Mr. McLEOD. Yes; f. o. b. car.

Mr. TAWNEY. It runs about that this year?

Mr. McLEOD. Yes.

Mr. POWELL. Is that No. 1 merchantable?

Mr. McLEOD. No; that is the whole product.

Mr. STEENERSON. That is the average for the high price and the low price?

Mr. McLEOD. Yes; that is the average price.

Mr. STEENERSON. Is that less than it was in 1914, or was it higher then?

Mr. McLEOD. Not particularly less. We have not been shoving our product on the market.

Mr. STEENERSON. How does that compare with 1915?

Mr. McLEOD. Not very much less; it is some, though.

Mr. STEENERSON. And 1912?

Mr. McLEOD. Well, I can not say from memory just how it is.

Mr. STEENERSON. You could not say whether the lumber was about the same price in 1912?

Mr. McLEOD. Well, there was not very much difference, not a very material difference.

Mr. STEENERSON. It has been pretty near to that price ever since you have been in the business?

Mr. McLEOD. Yes.

Mr. STEENERSON. Did it not run as high as \$24 or \$25?

Mr. McLEOD. No.

Mr. STEENERSON. It has never been that?

Mr. McLEOD. No.

Mr. STEENERSON. Now, you gave a list of those boats here, or were going to?

Mr. McLEOD. I can give you it.

Mr. STEENERSON. Are they old or new boats?

Mr. McLEOD. Well, two of them are what you would call new, and the oldest one is about 12 years old.

Mr. STEENERSON. Which one is that?

Mr. McLEOD. The *Mather*.

Mr. STEENERSON. That is the largest?

Mr. McLEOD. Yes.

Mr. STEENERSON. What did that cost you new?

Mr. McLEOD. About \$25,000.

Mr. STEENERSON. And what would it be worth now, 12 years old?

Mr. McLEOD. I consider it worth as much as it was when it was built.

Mr. STEENERSON. Just the same?

Mr. McLEOD. If you had to build that boat you could not build it to-day for \$40,000.

Mr. STEENERSON. I suppose there would be a large difference between a new boat and an old boat.

Mr. McLEOD. It has been taken good care of.

Mr. STEENERSON. Take the next boat, what would it cost?

Mr. McLEOD. It would cost about \$13,000.

Mr. STEENERSON. Is that an old boat or a new boat?

Mr. McLEOD. A new boat.

Mr. STEENERSON. What is the name of that boat?

Mr. McLEOD. The large one, the *Mather*.

Mr. STEENERSON. What does the *Mather* draw?

Mr. McLEOD. She draws 10 feet.

Mr. STEENERSON. And the Onaka?

Mr. McLEOD. Eight.

Mr. STEENERSON. And what does the other boat draw?

Mr. McLEOD. The small boat, about 6 feet.

Mr. STEENERSON. And the name?

Mr. McLEOD. The *John A. Minor*.

Mr. STEENERSON. How old is that?

Mr. McLEOD. Three or four or five years.

Mr. STEENERSON. What is the next one?

Mr. McLEOD. Those are all the steamboats, except we had three alligators.

Mr. STEENERSON. How much water did they draw?

Mr. McLEOD. Three feet and three feet six.

Mr. STEENERSON. You used them in the interior lakes; how did you get to the other lakes?

Mr. McLEOD. The reason we used this class of boats is that we can portage them over.

Mr. STEENERSON. Are these good-sized lakes?

Mr. McLEOD. Yes.

Mr. STEENERSON. You tow the logs and then haul the logs over the portage?

Mr. McLEOD. Run them through the stream connecting with the lakes.

Mr. KEEFER. There is a stream or water channel across the portage?

Mr. McLEOD. Not always at the portage, but the lakes are connected that we operate on.

Mr. KEEFER. You spoke about the timber on the islands. Now, I am asking for information. I have been across the lake two or three times, and the islands that I have seen do not appear to me to have any great amount of timber fit for lumbering.

Mr. McLEOD. In what part of the lake were you?

Mr. KEEFER. From here to Rainy River.

Mr. McLEOD. You would not see much in that distance.

Mr. KEEFER. Are the other islands similar in character?

Mr. McLEOD. Very similar; yes.

Mr. KEEFER. I saw very little timber. It was mostly small growth of birch and poplar and a few evergreens.

Mr. McLEOD. You probably could not see the interior of the islands. Most of the islands were cut at one time.

Mr. KEEFER. You were examined here with regard to the tourist traffic and asked about the islands being used by the tourists. Did you observe when you first came here the sand beaches on this other shore?

Mr. McLEOD. No.

Mr. KEEFER. You do not know anything about that?

Mr. McLEOD. No.

Mr. KEEFER. You do not know whether there were any sand beaches or not?

Mr. McLEOD. I presume there were. Where do you mean?

Mr. KEEFER. On the American side.

Mr. McLEOD. Yes; there was a beach there, I think, at the mouth of the river. That is the only place I visited.

Mr. KEEFER. All along from the Canadian boundary, where it runs into the Lake of the Woods a little north of Warroad and clear to the American shore at Red Lake?

Mr. McLEOD. I have never been on that part of the lake.

Mr. CAMPBELL. Mr. McLeod, do you know anything about the outlets of the lake as they were in 1893 and 1894?

Mr. McLEOD. I have seen them. I do not remember much about them.

Mr. CAMPBELL. How about the eastern one here. Had you been over the portage at Rat Portage to look up at the falls?

Mr. McLEOD. Yes.

MR. CAMPBELL. What height had the falls?

MR. McLEOD. Quite a considerable height; I should judge 20 feet or more.

MR. CAMPBELL. That is, before the rollerway dam was put in that has been spoken of as being erected in 1887?

MR. McLEOD. Yes.

MR. STEENERSON. Is that the place where the Norman Dam was built?

MR. McLEOD. No.

MR. KEEFER. Can you give us any information regarding the mining industry to-day?

MR. McLEOD. No; I know nothing about it.

MR. KEEFER. Can you give us any information about it in its earlier days?

MR. McLEOD. No; nothing.

MR. STEENERSON. This Norman Dam, so called, is also under the same control as the other dam, is it not? Has your company anything to do with that dam?

MR. McLEOD. Not our company in particular, but that is where we have built our pulp mill.

MR. STEENERSON. There is a dam there now, is there not?

MR. McLEOD. Yes.

MR. STEENERSON. What is the power used for?

MR. McLEOD. The power at that point is not used.

MR. STEENERSON. And never has been?

MR. McLEOD. No.

MR. STEENERSON. The water flows over it?

MR. McLEOD. Yes; and through it.

MR. WYVELL. You are planning to use that power?

MR. McLEOD. Yes.

MR. WYVELL. About when do you expect to be able to use it?

MR. McLEOD. We hope to be able to use it very soon.

MR. BERKMAN. Mr. McLeod, if the power is used for a pulp mill, you understand that the water can be used advantageously just as well at a high stage as at a low stage of water?

MR. McLEOD. I do not understand that.

MR. BERKMAN. That is, if the water is high you can use the water on the stone rolls just as well at a high stage as at a low stage. That is, you do not grind as fast with a lower stage of water?

MR. McLEOD. I am not familiar with the engineering work connected with the building of a power plant, but what I do understand is that with less than 18 or 20 or 22-foot head you have to transmit your power to your stones electrically. You can not drive them directly. You can not get the speed.

(The commission thereupon, at 6.25 o'clock p. m., took a recess until 8 o'clock p. m.)

AFTER RECESS.

The commission reassembled at the expiration of the recess, all the members being present except Mr. Glenn, Mr. Magrath presiding.

MR. ANDERSON. Mr. Chairman, unfortunately I have to be in Winipeg to-morrow morning. I propose taking the first train out in

the morning. I would like very much to have some intimation from the commission, if I may, as to when the commission will sit to hear the presentation of evidence as to the power interests. On that point my instructions are to say that the officials of the Government will require at least three months after the reports of the engineers are in their hands to prepare their case.

Mr. WYVELL. On behalf of the United States Government, I might say that we can get ready at any time on this branch of the question. Of course we have not as much to do as the Canadian authorities. We feel that the matter should be taken up with as reasonable promptness as possible. We do not wish to urge any hurry at all because of the importance of the question, but we do think that there should be as reasonable promptness as possible in order that the people around Warroad may know, at any rate, what to expect.

Mr. STEENERSON. I wonder if it would be possible to have the commission get some action on the part of the persons that control the dam in the spring so as to avoid any extreme high water. I understood that that was done at the request of somebody here three years ago, even before the department acted. Of course they would appreciate it very much if they could avoid any extreme high water in the spring. Mr. Berkman says they are very much interested in that. If that were provided for pending the investigation, it would be a great advantage.

Mr. MAGRATH. It appears to me that we should deal with this matter before that time, Mr. Steenerson.

Mr. ANDERSON. Mr. Chairman, I want three months after the reports of your engineers are in the hands of our officials. They tell me that it is absolutely impossible for them to prepare their case in less than that time, and I appreciate that because your engineers have been engaged now for a very considerable length of time—two or three years, I believe—in making their investigations and reports.

Mr. TAWNEY. Mr. Anderson, you can not make any comparison between the work which the commission, through the consulting engineers, has done up to this time and the work that your engineers will have to do after they get the result of those three years' work.

Mr. ANDERSON. None at all; that is quite true.

Mr. TAWNEY. There isn't any comparison at all. All the data are in the hands of our engineers to-day and have been for some time. The only thing you have not had is the text of the report. Both Governments are pressing the commission at this time for its conclusions and its recommendations in this matter to the end that they may take up, diplomatically or otherwise, the final disposition of this international dispute. I may say that it was the hope of the commission that we would be able to have the hearing on the power interests as soon as the text of the report is printed and in the hands of those who are interested in the power development. We hoped that we could have the hearing and then proceed with the collection of such additional data and information as would be necessary for the preparation of our final report, so that it could be submitted within the shortest possible time to both Governments. We are anxious to dispose of the matter as soon as possible. I know that I am expressing what the thought of the commission has been, and that is to hold the hearing of the power interests some time in November at

Winnipeg. That has been discussed to some extent; and while not finally decided upon—and I am not authorized to express the views of the commission—it was the hope of the commission that we might dispose of the hearing at least in November. That would give you practically two months. The regular session of the commission will be held at Ottawa in October next, so we could not have the hearing before that time.

Mr. ANDERSON. It is not a vital application for the purpose of obtaining delay.

Mr. TAWNEY. But I heard you asking for more time for the consideration of the data that we will place in the hands of your engineers in order that it might be analyzed and criticized, if your engineers deem that to be necessary.

Mr. ANDERSON. Yes; but, Mr. Tawney, some of that information, I think, is not yet in the hands of our engineers, and, as you say, the text of the report will not be for some time. This is a matter of very great magnitude, and the matter has been now under consideration for a long time. If the matter is to receive at the hands of the officials of the Government the consideration that they think it should receive, they must be afforded ample and sufficient time to prepare their case. That is all I am asking. When I am asking for three months I am asking for as little time as they feel justified in asking for the purpose which they have in mind. Under the circumstances, I think that, while both Governments are anxious to have this matter settled, everybody who is connected with it is anxious to have it terminated. At the same time, the matter of a few weeks now, in view of the time that has been already consumed, does seem to me will not be any waste of time.

Mr. TAWNEY. I would suggest, Mr. Chairman, that the application be taken under advisement, and that before we finally adjourn at Kenora we announce the time and place when we will hold the hearings on the last branch of this investigation.

Mr. WYVELL. I did not want my statement to appear as endeavoring to cut off the Dominion Government. I want to afford Mr. Anderson as much time as he thinks necessary. I regarded his application with the utmost seriousness, and my statement was made without reference to his application, but merely so far as the Government of the United States is concerned. We would like to have the matter disposed of with as reasonable promptness as possible.

Mr. POWELL. These cases occupy a very peculiar position indeed. The real litigants and parties whom we must know are the Governments of the United States and Canada. Behind that there is the relation of trustees and beneficiaries. The United States stands as representing itself and all its subjects, and the United States is the party really that we know. It is under the aegis of the United States that the United States citizens come in here, and the same remarks apply to the citizens of Canada. If the United States representative and the representative of the Dominion of Canada agree upon a line of policy that the further hearing should be adjourned for three months for the purpose of giving evidence, I do not see very well how we can refuse to comply with the request. It would be taking an arbitrary stand. At the same time, if that were done, I desire to express pretty strong views with respect to the adjournment of

this case. These two Governments knew what was before them. They have known it for two or three years.

According to the statement of counsel, they have made progress to the extent that they have come to the conclusion it is a serious question. How long they are going to work at this serious question I do not know, but, looking at the beneficiaries—if I may call them such—behind the United States and Canada, it would seem that their interests are meantime practically ignored. They are brought before us with a notice to prepare their evidence with respect to valuation, and have done so. Now the other parties interested ask for three months in which to scientifically prepare a case which was gotten up by these parties without having such an opportunity. However, if the representatives of Canada and the United States agree upon this, they can take the responsibility, and not myself as a member of the commission.

MR. MAGRATH. I do not think there is anything unreasonable in the request made, because we must remember that the representatives of Canada made a request many months ago that we release this data to them as we were collecting it. We refused to release information to anybody until we had it properly collected and tabulated, and now, naturally, they come forward and say they want ample time to look into this matter.

MR. CAMPBELL. Mr. Chairman, I can not tell how long it would take us to get ready for the city of Winnipeg until I get those two volumes containing the data of the engineers. Our engineers tell me that they would not like to express any opinion as to our action until they have seen the third printed book containing the text and the stenographers' extension of the evidence given to-day. There are two things: one is the difference between the estimate of what would have been the natural and normal flow or height of water and what it has been under the actual regulations and would be under either method A or B. I am only an arithmetician—I am not an engineer or physicist—and I can not approach that. If I were to take those two books, one of graphs and the other of tables, and try to get them coordinated I might get the wrong result. Engineers would not need so much time, but from what they tell me I do not believe we would have a very thorough knowledge of it from an engineer's examination until perhaps the full term of three months. Then there is the other question of the plans, for short called plans A and B, which raises a very important question and which might influence our position as to which of the two plans we would adopt. That more especially applies to Rainy Lake, although it seems to have a reference also to this one. That, too, raises the most important question of policy, and it would somewhat effect the measure of compensation, because, while no one knows yet who is to pay the compensation, we all do know that there will be some compensation if the waters are to be kept up to the heights suggested as long as they can be each year in order to make a storage reservoir. There will be some compensation to be paid to the landowners. There is no question about that, but there might be some difference according to the plan that was urged upon you and recommended by you to the two Governments.

MR. LAIRD. I desire to support the application. The interests that are now being heard have had substantially two months of prepara-

tion. Those interests are not as serious as the power interests to be considered, and I think we are not asking anything unreasonable in asking the period of time that has been mentioned.

Another aspect of the case is that a part of these power interests are still under the control of the Dominion Government. My clients control two, but the power interests very naturally will endeavor to consult and confer with one another as to the best development of these power interests; and situated as they are, some in Winnipeg and some in Ottawa, and considering the difficulty of engaging the services of first-class engineers for the consideration of these matters, it will necessitate at least three months for the adequate preparation of it. As the commission is very well aware, these tables have just now been obtained and the report is not yet in our hands. These tables are not of very much value to our clients without the report. So far as my clients are concerned they have not yet been furnished with them.

Mr. TAWNEY. Mr. Meyer, when do you anticipate the text of the report will be ready for distribution?

Mr. MEYER. We have been considering that matter and expect to hold a conference at Minneapolis as soon as we return from the hearings to take up the remaining chapters in the text; but considering the proof reading and all that is required in the way of getting it through the Printing Office, I would hesitate to promise definitely that copies could be distributed in less than about four weeks. It may be a little less than that, but I would not like to promise them sooner than that.

Mr. TAWNEY. Do you think you are safe in saying that they will be ready for distribution in four weeks?

Mr. MEYER. I think so. Do you not think so, Mr. White?

Mr. WHITE. Four weeks will go around pretty quickly. The printing department and the engravers and lithographers are largely out of our immediate control. But in speaking with Mr. Meyer we thought four weeks was as soon as could be reasonably expected.

Mr. POWELL. How much is to be set up in type yet?

Mr. MEYER. About a third of it has to be set up in type.

Mr. TAWNEY. I asked the question with a view of seeing if we could not compromise on some date that would be satisfactory to all concerned.

Mr. MAGRATH. The commission will take the matter under consideration. Mr. Anderson, I would like to ask if you want three months' time after that report is ready.

Mr. ANDERSON. I would like three months' time after the report is ready.

Mr. MAGRATH. Have you not sufficient data available now to keep your engineers busy?

Mr. ANDERSON. No doubt we have. Mr. Campbell suggests that the engineers can not take the data and work it out now without knowing what the whole report is going to be. One can not tell how to apply the data that has already been procured. There is another matter for consideration. The officials who have charge of this naturally have other work to perform, and it is not right to insist that they shall take this up and do nothing else and keep at it until it is finished. When I put the time as three months I was not asking for

more than I was instructed to ask for or more time than we thought was necessary in which to make our preparation.

Mr. MIGNAULT. Mr. Anderson, I was under the impression that you had in what is now published sufficient data to begin work.

Mr. ANDERSON. We may be able to do something, Mr. Mignault, but I do not know how far we could go. I am in the same position as Mr. Campbell; I do not know what will be required to be done.

Mr. TAWNEY. You have the maps, the graphs, and the tabular matter. So far as the text, which is merely explanatory, is concerned, that to an expert is of no consequence whatever.

Mr. ANDERSON. If I understand the text rightly, it is more than explanatory. The text of that report is to recommend certain things.

Mr. TAWNEY. No; the consulting engineers are not employed for the purpose of recommending anything.

Mr. ANDERSON. All I can say is that my instructions from responsible officers who have charge of this matter for the Government were to ask for that length of time.

Mr. MAGRATH. We will take the matter under consideration.

Mr. STEENERSON. Suppose that request should be granted; when would the hearings be held? Would they probably be held in January?

Mr. TAWNEY. Probably in January.

Mr. BERKMAN. Mr. Chairman, there is a case that might throw light on the levels of the Lake of the Woods before the dam was put in. I refer to the case of the Rainy Lake Boom Co. v. The International Boom Co., which was tried at Toronto in 1907.

Mr. TAWNEY. What was the issue?

Mr. BERKMAN. It involved the level of the Lake of the Woods.

Mr. ROCKWOOD. Mr. Berkman, you are misinformed. I was in that litigation from beginning to end. There were three or four cases in the States, and one finally won in the Canadian courts. In the Canadian courts the sole issue was whether the legislature of the State of Minnesota had power to authorize a Minnesota corporation to put a boom entirely across the river, gather in all logs that came down, and collect tonnage for sorting them against the will of the owner. The decision was against that power on the part of the legislature.

Mr. TAWNEY. Have you the record of the case in your office?

Mr. ROCKWOOD. I think I have a copy of the judgment of the Canadian court.

Mr. STEENERSON. Was the evidence printed?

Mr. ROCKWOOD. It was never printed. The case was tried before Sir Edward Mulock in the nisi prius court.

Mr. STEENERSON. Mr. Berkman spoke to me at the recess to-day and referred to this testimony bearing on the Lake of the Woods levels. I do not know a thing about it, but he says that he was informed by Mr. Bourgeois that there was testimony which he, Mr. Berkman, had spoken to the engineers about, which was valuable testimony as regards the lake levels.

Mr. ROCKWOOD. I was in court in Toronto during the taking of testimony and during the argument in that case, and I know that Mr. Berkman is misinformed.

Mr. BERKMAN. I might say that Mr. Bourgeois in his evidence produced at Warroad testified that there were valuable data avail-

able in regard to the levels in the channels of the Rainy River and along the Lake of the Woods. When he spoke of that he told me that he had reference to this case, and he said it was well developed in the case that was tried at Toronto.

Mr. TAWNEY. If you have evidence of this kind, I would suggest that you obtain a certified copy of the record and submit it to the commission. Then, if it is material in this investigation, we will print it as a part of the proceedings.

Mr. BERKMAN. I might suggest that we do not have the means to obtain this evidence, and possibly the commission, through its engineers, could secure it. As I understand, Mr. White lives at Toronto. He might go to the reporter who took the testimony and have transcribed the portions that apply to the levels of the Lake of the Woods.

Mr. MAGRATH. That is entirely satisfactory. Mr. White can look it up in Toronto. We will attend to it.

Mr. ROCKWOOD. Mr. Chairman, if I may be permitted, I want to suggest that the hearing on the subject of power be early in January. I hope that will meet with the approval of everybody.

Mr. STEENERSON. It would be unsatisfactory to your humble servant, because he will be in Washington at that time.

Mr. TAWNEY. The question is one for the consideration of the commission. I would say, Mr. Rockwood, that we have yet to dispose of the question of the value of lands of the State of Minnesota on Rainy Lake, because people interested there came unprepared to present any evidence.

Mr. STEENERSON. Is it not quite possible, Mr. Chairman, that the case will not be disposed of before spring? If so, I want the commission to bear in mind my first suggestion.

Mr. MAGRATH. We sincerely hope, Mr. Steenerson, that it will be disposed of before that, but your suggestion will be borne in mind in any event. Now, Mr. McLennan, you may proceed with your witnesses.

Mr. ANDERSON. As I stated, I have to leave for Winnipeg in the morning, and I have a couple of witnesses that I wish to call. If I may I will call them now, so that I will be through.

Mr. MAGRATH. That will be perfectly satisfactory.

TESTIMONY OF MR. S. S. SCOVIL, OF KENORA, ONTARIO.

(S. S. Scovil, being first duly sworn, testified as follows:)

Mr. ANDERSON. What is your occupation?

Mr. SCOVIL. Civil engineer in the employ of the Dominion Government.

Mr. ANDERSON. How long have you been in the employ of the Dominion Government as a civil engineer?

Mr. SCOVIL. Three years.

Mr. ANDERSON. Where is your home?

Mr. SCOVIL. In Kenora.

Mr. ANDERSON. How long have you lived here?

Mr. SCOVIL. I was born here in 1886.

Mr. ANDERSON. Then, you are thoroughly familiar with Kenora and its surroundings?

Mr. SCOVIL. Fairly conversant.

Mr. ANDERSON. What is the population of Kenora, approximately?

Mr. SCOVIL. About 6,000.

Mr. ANDERSON. What are the industries that maintain or keep up the town?

Mr. SCOVIL. Lumbering, fishing, and mining. Kenora is also the divisional point of the Canadian Pacific Railway.

Mr. ANDERSON. What about tourist traffic?

Mr. SCOVIL. Tourist traffic is a very considerable factor.

Mr. ANDERSON. At what time of the year?

Mr. SCOVIL. During the summer months.

Mr. ANDERSON. In what way is the tourist traffic a great factor?

Mr. SCOVIL. In the northern portion of the lake there are some 2,000 or 2,500 people for three months in the year.

Mr. ANDERSON. Where do they come from principally?

Mr. SCOVIL. From Winnipeg, principally.

Mr. ANDERSON. It is used principally as a summer resort by the Winnipeg people?

Mr. SCOVIL. To a great extent.

Mr. ANDERSON. About how many people did you say?

Mr. SCOVIL. Between 2,000 and 2,500 people.

Mr. ANDERSON. They occupy what territory?

Mr. SCOVIL. They occupy the islands and the mainland in the northern portion.

Mr. ANDERSON. How would you say they were distributed in number as between the islands and the mainland?

Mr. SCOVIL. There are more of them on the islands than on the mainland.

Mr. ANDERSON. So far as the people on the islands are concerned, what means of access have they?

Mr. SCOVIL. Entirely by launches.

Mr. ANDERSON. Mr. Campbell suggests that the people on the mainland, to a considerable extent summer residents, are dependent on the water, too.

Mr. SCOVIL. Outside the limits of Keewatin, where they can walk over the hill. Otherwise they are all dependent on the water.

Mr. ANDERSON. I suppose that the limit of development of these islands as a summer resort has not been nearly reached yet?

Mr. SCOVIL. Hardly. There are at least 10,000 islands in the lake, and a very small number of them are taken at the present time.

Mr. ANDERSON. Generally speaking, what is the class of buildings put up by these people on the islands?

Mr. SCOVIL. In the earlier years it was of a somewhat cheap nature, cheaper structures, but of later years much more expensive, and boathouses and camps are being put in and many improvements on the various places.

Mr. ANDERSON. Can you give us an idea of the amount of money being expended by people in building summer homes?

Mr. SCOVIL. This information was furnished the engineers of the commission at their request in January, 1914, and the totals are given here. This information applies up to the summer of 1913, and there is more building going on each year. These figures show, boathouses, \$191,000; in camps, \$1,104,000; and in docks—that is, distinct from the boathouses—\$32,500. I might say that other than that there

is the investment in their launches. I can not give you the number of launches, but a very conservative estimate is 500, and allowing \$500 per launch would show an investment of a quarter of a million in launches.

Mr. ANDERSON. You think that is a conservative estimate?

Mr. SCOVIL. That is very conservative, because there are launches here running easily up into several thousands of dollars, numerous launches.

Mr. ANDERSON. From the standpoint of navigation, what can you say as to whether or not a high level of water should be maintained?

Mr. SCOVIL. The camps naturally are situated in many bays, and the higher the level the greater range of navigation, especially for these smaller boats.

Mr. ANDERSON. Coming now to the lumbering industry. Where does the timber come from principally that is used in the manufacture of lumber?

Mr. SCOVIL. At the present time I understand that the principal source is in the Whitefish district.

Mr. ANDERSON. Would that be taken from around the lake, or would they have to go up rivers and creeks to get the timber?

Mr. SCOVIL. That would be taken inland to a great extent.

Mr. ANDERSON. And a great deal of it would have to be brought out through waterways flowing into the lake?

Mr. SCOVIL. Yes.

Mr. ANDERSON. What necessity is there for high water, so far as getting those logs out is concerned?

Mr. SCOVIL. To navigate out of Whitefish I understand that the lower level gives very much trouble. There is a great loss of logs in low water and a very great loss of time. The boats pile up occasionally, notwithstanding the navigators and the logs are continually snaking. The method of towing has to be modified to a great extent. Everything entails a loss of time and money.

Mr. ANDERSON. Speaking of the mining industry, at one time that was a very important industry in this district, was it not?

Mr. SCOVIL. Very much so. It was probably of the greatest importance at one time.

Mr. ANDERSON. The mines are still here?

Mr. SCOVIL. They are still here.

Mr. ANDERSON. I suppose there are some people who feel that they will yet be developed and become profitable?

Mr. SCOVIL. Well, you would not have to go outside of this room to discover that. At the present time I understand that one mine is operating and there are prospects of two more. They are at work opening up the mines now.

Mr. ANDERSON. What mines were working and producing bullion when they were being developed?

Mr. SCOVIL. I can not remember all of them.

Mr. ANDERSON. There were a number of them?

Mr. SCOVIL. Yes; they were very numerous in the early days.

Mr. ANDERSON. For the purpose of mining navigation is all essential to this district?

Mr. SCOVIL. Possibly for the purpose of mining navigation would be more essential than for any other reason.

Mr. ANDERSON. Will you please explain that?

Mr. SCOVIL. The mines have been opened up in pretty much every direction, and navigation is the only means of bringing in their supplies and machinery. If you have a mine you can not very well use any other method of getting in your supplies.

Mr. ANDERSON. One of the witnesses to-day spoke of a rock in the channel where he had measured it in time of high water. What was the name of that rock?

Mr. SCOVIL. Davys Rock.

Mr. ANDERSON. Where is that rock located?

Mr. SCOVIL. Between 20 and 25 miles from here on the main steam-boat channel.

Mr. ANDERSON. Have you made any examination of that rock to determine its level?

Mr. SCOVIL. I determined the elevation of the crest of the rock in 1913.

Mr. ANDERSON. What did you find it to be?

Mr. SCOVIL. By method of water level transfer from Kenora on a calm day, when there was no wind and no ripple on the water surface, I got the elevation of the rock to be 1,060.6, sea level datum.

Mr. ANDERSON. Assuming that the statement of the witness made here to-day was true, that there was a depth at the time that he measured it or examined it in 1876 of 16 inches, what would that make the level at that time?

Mr. SCOVIL. He gave a statement of 14 to 18 inches. I have taken the minimum of 14 inches. That would give a water level of 1,061.8 in July, 1876.

Mr. ANDERSON. Suppose you took 16 inches, which would be the mean of what he gave, what would that make it?

Mr. SCOVIL. That would be approximately 1,062.

Mr. ANDERSON. The mark called the Kennedy high-water mark has been spoken of at numerous times during these sittings. What is that Kennedy high-water mark as you understand it?

Mr. SCOVIL. The Kennedy high-water mark is a chiseled mark cut at or about and very closely approximating a lower limit of lichen growth on the rock, and above this chisel mark the letters "H. W." have been chiseled in. I have photographs of that mark. I might say that there are four marks in all.

Mr. ANDERSON. That is, at different places?

Mr. SCOVIL. At different places; yes. There are two in the northerly end of the lake and two midway across the lake.

Mr. ANDERSON. Can you give us more explicit information as to where they are?

Mr. SCOVIL. One is on the easterly shore of Tunnel Island just above the hospital at the eastern outlet. The second one is on Island S 565 in Portage Bay. Portage Bay is the bay between here and Keewatin. The third mark is cut in the granite on Flag Island Point. The fourth mark is cut in the easterly end of Bucketty Island.

Mr. MAGRATH. Within what distance of Kenora?

Mr. SCOVIL. Bucketty Island is somewhere above 40 miles distant from Kenora.

Mr. ANDERSON. Can you give the elevation of those marks as you found them?

Mr. SCOVIL. Before giving the elevations of those marks I might state that they have been tied in by different methods. The Tunnel Island mark was an instrumental tie at an elevation of 1,062.6. The one on Island S 565 is at an elevation of 1,062.4, made by water level transfer on a calm day. The marks on Flag Island Point and Bucketty Island were both tied in by water-level transfer in slightly rough weather, and so they are approximate and very close. Flag Island Point is at 1,063 and Bucketty Island 1,062.9.

Mr. ANDERSON. There are some discrepancies or differences in those various elevations. How would you account for those differences; in the different methods by which they have been taken?

Mr. SCOVIL. One possible explanation is that as you stand away from a high-water mark it will appear very distinct, very well defined, and upon going closer to it you can not define it within closer than a couple of tenths possibly in some cases.

Mr. ANDERSON. You have before you some statement of levels, Mr. Scovil. What is that statement?

Mr. SCOVIL. During the same summer of 1913, in which I tied in the Kennedy mark, I took the elevation of water marks at several points around the lake shore.

Mr. ANDERSON. Do you mean the high-water mark for 1913?

Mr. SCOVIL. No, sir; the high-water mark is what is locally known as the high-water mark and is visible on all the rocks.

Mr. ANDERSON. Did you take photographs of the Kennedy high-water mark?

Mr. SCOVIL. I did, sir.

Mr. ANDERSON. Will you produce them, explain them to the commission, and put them on file? The first photograph that you have there is what?

Mr. SCOVIL. The first photograph shows a rod held on the highest point of Davys Rock on June 28, 1913. The second photograph shows the Kennedy high-water mark on Tunnel Island, and the third and fourth show the Kennedy high-water mark on Island S 565. The fifth photograph shows the Kennedy high-water mark on Flag Island, and the sixth shows the Kennedy high-water mark on Bucketty Island.

(The photographs referred to were received and marked "Exhibit S.")

Mr. ANDERSON. Now, to come back to the statement of high-water levels. That statement was prepared by you, was it?

Mr. SCOVIL. Yes, sir.

Mr. ANDERSON. I notice that there are some figures in red and others in blue.

Mr. SCOVIL. This was originally made out on waterpower-survey datum, and the red figures show a reduction to sea-level datum.

Mr. ANDERSON. What column there represents the high-water level?

Mr. SCOVIL. The last column.

Mr. ANDERSON. That is the extreme right-hand column?

Mr. SCOVIL. Yes, sir.

Mr. ANDERSON. Have you the map showing the location of the point where these levels were taken?

Mr. SCOVIL. I have.

Mr. POWELL. When the commission was up here three or four years ago, we were in different parties, and I have forgotten which

members of the commission were with me, but some person who was in charge of the boat pointed out the high-water mark that was indicated by two spikes driven into the rock. Do you know anything about that?

Mr. SCOVIL. I could not give you any information about that. I was never able to find out who had driven those spikes in.

Mr. POWELL. But you saw the spikes?

Mr. SCOVIL. Yes. That was in error taken for Kennedy's high-water mark at that time.

Mr. POWELL. How do they compare as to height?

Mr. SCOVIL. I could not give you that information at the present time. I do not remember.

Mr. POWELL. As I recollect, it indicated some watermark on the face of the rocks.

Mr. SCOVIL. Well, as I said before, it was assumed in error at that time that those two spikes were Kennedy's high-water marks.

Mr. POWELL. You do not mean by that that they were driven in by Kennedy?

Mr. SCOVIL. Yes; in error it was assumed at that time that they had been driven in by Kennedy. We knew that Kennedy had cut one in on Tunnel Island, and we had not found any of those marks up to that time.

Mr. POWELL. There is no use in establishing what they are at this date?

Mr. SCOVIL. Not that I know of. I could furnish you with the elevations.

Mr. POWELL. It might be of interest, but, of course, it would not be conclusive evidence.

Mr. ANDERSON. Mr. Scovil, with reference to the navigation on the Winnipeg River, is any part of that river navigated now?

Mr. SCOVIL. Winnipeg River is navigated from Kenora and Kee-watin to Minaki, or, rather, on beyond to White Dog.

Mr. ANDERSON. How far is White Dog past Minaki?

Mr. SCOVIL. Ten or 12 miles.

Mr. ANDERSON. To what extent is traffic carried on between Kenora and Minaki at the present time? Mr. Keefer suggests that I had better get the distance between Kenora and Minaki first. What is that distance?

Mr. SCOVIL. From Kenora to Minaki is about 18 miles.

Mr. ANDERSON. Is that by water?

Mr. SCOVIL. That is by water.

Mr. ANDERSON. To what extent is navigation there now carried on?

Mr. SCOVIL. I believe there are two boats operating between Kenora and Minaki.

Mr. ANDERSON. Is it a traffic that is likely to grow, in your opinion?

Mr. SCOVIL. Undoubtedly it will grow. Minaki is opening up as a tourist resort, and it is the only connection between the two points other than the railway to Winnipeg.

Mr. ANDERSON. Have you any opinion to offer as to the effect of regulation of outflow upon the Winnipeg River?

Mr. SCOVIL. Navigation in the Winnipeg River has, during low periods in the past, suffered. They have not been able at times to come into their docks below Kenora and have been held up some miles down the river. At times there is necessity of navigation in

various arms of the river. A regulated outflow, doing away with the extreme minimum, would greatly benefit conditions.

Mr. ANDERSON. Do you know what provision is being made by the department of public works and the water powers at Ottawa to insure the future navigation of the river between Kenora and Lake Winnipeg?

Mr. SCOVIL. In the proposed schemes of future development for power in the Winnipeg River provision has been made throughout for canalizing the Winnipeg River and all the various falls.

Mr. WYVELL. Mr. Scovil, much emphasis has been placed upon Davys Rock. Is it not a good thing to have a rock of that kind stick out of the water a little rather than be slightly covered by water? For purposes of navigation can not you see the rock easier if it sticks out of water 6 inches instead of being covered by the water?

Mr. SCOVIL. If you are referring to the manner in which the depth was measured on the rock, I would say in the first place that it was in the early days of navigation when little was known as to the channels on the lakes. The rock is buoyed, which is sufficient for navigators.

Mr. WYVELL. There is a buoy on it now?

Mr. SCOVIL. It was buoyed; yes.

Mr. WYVELL. I did not understand the emphasis placed upon it. Are you an experienced navigator?

Mr. SCOVIL. No.

Mr. WYVELL. Have you had to travel through the lake a good deal in motor boats and all other kinds of craft?

Mr. SCOVIL. I have.

Mr. WYVELL. The rock, then, is not dangerous now, whether the water is high or low, is it?

Mr. SCOVIL. Not necessarily so.

Mr. WYVELL. Because it may be seen on account of the buoy.

Mr. SCOVIL. Yes.

Mr. WYVELL. So there is little difference so far as the danger from the rock is concerned?

Mr. SCOVIL. It makes a difference if there is any towing going on there. It is a contracted channel and in low water the logs would snake on the rock and bring about considerable loss.

Mr. MIGNAULT. I think the point is this, Mr. Wyvell: Capt. Cooper said he ran ashore on that rock and that he stood on the highest part and the water came up to his knees. That would show that at that time, in June, 1876, there were from say 14 to 16 inches of water over the highest point of the rock. So the height of this rock is material merely to show what was the height of the water under natural conditions in June, 1876.

Mr. POWELL. Mr. Wyvell, can not you let that go? I think we all know that a rock that is seen is less dangerous than a rock that is not seen.

Mr. STEENERSON. Mr. Scovil, with reference to this tourist traffic, what is the usual draft of these boats and launches?

Mr. SCOVIL. I could produce some person who could give you that evidence better than I could.

Mr. STEENERSON. But you have some idea of it. You have been testifying as an expert about it.

Mr. SCOVIL. They run on an average of say 2 to 3 feet.

Mr. STEENERSON. What you might call shallow-draft boats?

Mr. SCOVIL. Yes, sir. Cutting down to 2 feet is decidedly low to run.

Mr. STEENERSON. Rowboats do not take that much.

Mr. SCOVIL. No; but how far can you navigate in a rowboat at any time?

Mr. STEENERSON. If you were torpedoed on the high seas you might navigate a good ways in a rowboat, but I will drop that. These islands are rocky and weeded islands, these summer-resort islands that you spoke of?

Mr. SCOVIL. To a certain extent.

Mr. STEENERSON. Are there any sand beaches on them?

Mr. SCOVIL. Yes.

Mr. STEENERSON. Is not that sand beach more exposed in low water than in high water?

Mr. SCOVIL. Possibly it is.

Mr. STEENERSON. Possibly? Do you not know that it is?

Mr. SCOVIL. It is rather self-evident that you would have a greater area exposed.

Mr. STEENERSON. Some reference was made by the communication from the railroad companies when we were at Warroad to the summer-resort traffic, and I think they referred to some sand beaches north of here and near the Grand Trunk Pacific. Do you know those sand beaches?

Mr. SCOVIL. I do not. They do not come in on the Lake of the Woods near the Grand Trunk Pacific.

Mr. STEENERSON. The Grand Trunk Pacific does not come in near the Lake of the Woods?

Mr. SCOVIL. It is 20 miles north. It does not touch the Lake of the Woods.

Mr. STEENERSON. I have their folder here, and its map shows it as going to Kenora.

Mr. SCOVIL. That is possibly advertising.

Mr. STEENERSON. Are there any sand beaches along the north shore of the Lake of the Woods?

Mr. SCOVIL. Yes; there are.

Mr. STEENERSON. Are they not an important element in summer resort attractions? Do not the people like to have their families and their children play in the sand on the sand beaches? Is not that one of the attractions of a summer resort?

Mr. SCOVILL. It is; but I think the sand beach is rather overdone. When you come down to sand beaches you are getting around to swimming, and you will see more swimming around here off docks and in deep water than you will at a sand beach.

Mr. STEENERSON. Your idea, then, is that high water would be desirable, even if it did drown out the sand beaches?

Mr. SCOVIL. No; I have not said that at all.

Mr. STEENERSON. That is what has been done on the south side of the lake, where there is an almost continuous sand beach. The people claimed that that sand beach was quite an attraction as a summer resort. They testified to that at Warroad. Now it is flooded and the attraction is destroyed. Does it not operate in the same way up here?

Mr. SCOVIL. A sand beach is, to a certain extent, some attraction.

Mr. STEENERSON. But you would rather not have it?

Mr. SCOVIL. No; I have not said that, but a sand beach is principally for swimming, is it not?

Mr. STEENERSON. No. A sand beach is something to sun yourself on, and have the children play on, and furnish a nice clean place upon which to picnic. That is what I understand by a sand beach being an attraction for summer visitors. People do not want to come to a lake where there are nothing but trees and muskeg. They like to have a clean sand beach that is washed by the waves and cleaned off every once in a while.

Mr. SCOVIL. Unfortunately, nature did not give very many of them close to the town.

Mr. STEENERSON. There would be more of them exposed in low water than in high water, I suppose. Are there not sufficient of them in low water to make quite an attraction here?

Mr. SCOVIL. I have never heard them spoken of as a special attraction at all.

Mr. LAIRD. These sand beaches are situated where? Are they all in the bays?

Mr. SCOVIL. No; not altogether in the bays. There are two on Coney Island.

Mr. LAIRD. What proportion are on the bays?

Mr. SCOVIL. I could not give you that information.

Mr. KEEFER. Mr. Scovil, when you say that high water is desirable, do you take into consideration all the different matters that would be conserved here, such as lumbering, mining, and navigation, which would include the towing and the fishing; all those different things?

Mr. STEENERSON. We object to that question.

Mr. KEEFER. You mentioned the high water as one ground, Mr. Scovil. How do you arrive at that opinion?

Mr. SCOVIL. I mentioned that in connection with navigation.

Mr. KEEFER. Then, so far as lumbering is concerned, it is desirable to have high water?

Mr. SCOVIL. Yes.

Mr. KEEFER. What would be its effect with regard to the access to these properties having veins on them?

Mr. SCOVIL. High water would be a great benefit to them.

Mr. KEEFER. In what way?

Mr. SCOVIL. As I explained before, the mines and prospects are at various points around the lake shore and inland and in many of the bays and inlets, and the higher the stage of water the more direct route to these various mines.

Mr. KEEFER. Originally, the town was started as a mining town, was it not, after the railroad was built?

Mr. SCOVIL. I was not here at that time.

Mr. WHITE. Mr. Scovil, with reference to this list of high-water marks marked "Exhibit T" I would like to know whether you have taken any average of all the marks that you referred to?

Mr. SCOVIL. I have. The mean elevation of Kennedy's four marks was 1,062.7. The mean of some 20 marks at various locations around the lake is 1,062.5.

Mr. STEENERSON. Do you know anything about when these marks were placed on the rocks?

Mr. SCOVIL. I do not.

Mr. STEENERSON. All you know is that the marks were there when you were there; you do not know when they were put there?

Mr. SCOVIL. I do not.

Mr. STEENERSON. And you do not know whether they were put there at the same time or not?

Mr. SCOVIL. I should judge if the water were up in one portion of the lake it would be up in the other and leave its mark all over at the same time.

Mr. STEENERSON. But you have testified that there is quite a difference between these so-called Kennedy marks. Up on Bucketty Island and here at Kenora there is a difference in the elevations which you fix for them.

Mr. SCOVIL. I thought you were referring to the marks shown around the lake shore and not to the Kennedy marks.

Mr. STEENERSON. Then you are not talking about the Kennedy marks now in stating these averages?

Mr. SCOVIL. I gave two mean elevations; first the mean of the Kennedy marks and then the mean of the other marks.

Mr. STEENERSON. But the Kennedy marks are the only artificial marks that you refer to now. These other marks are natural markings.

Mr. SCOVIL. Yes; I do not know how else they could be made.

Mr. STEENERSON. They are not cuttings on the rocks?

Mr. SCOVIL. No.

Mr. STEENERSON. But that is what the Kennedy marks are.

Mr. SCOVIL. Yes.

Mr. STEENERSON. And all you know about the Kennedy marks is what you have been told?

Mr. SCOVIL. Yes.

Mr. STEENERSON. You found that the elevations for these Kennedy marks at the different points did not agree?

Mr. SCOVIL. There is a slight variation.

Mr. STEENERSON. What was the greatest variation?

Mr. SCOVIL. Three-tenths of a foot is the greatest variation.

Mr. STEENERSON. What was the highest elevation?

Mr. SCOVIL. The mark on Flag Island Point.

Mr. STEENERSON. And the next highest was on Bucketty Island?

Mr. SCOVIL. The next was on Bucketty Island.

Mr. STEENERSON. When were those marks estimated to have been made?

Mr. SCOVIL. Those marks were cut in 1895.

Mr. STEENERSON. That is what you were told?

Mr. SCOVIL. I think I could produce evidence to show that they were cut in 1895.

Mr. STEENERSON. That is what you were informed?

Mr. SCOVIL. Yes.

Mr. STEENERSON. Is the Kennedy that has been referred to the one who used to be connected with the power company here?

Mr. SCOVIL. No; it is James C. Kennedy, hydraulic engineer, of Montreal.

Mr. POWELL. Is he living now?

Mr. SCOVIL. Yes, sir; he is living.

Mr. STEENERSON. What effect would the wind have on the elevation? Might there not be a difference in elevation by reason of the wind?

Mr. SCOVIL. It is quite possible.

Mr. STEENERSON. Some of the old sailors at Warroad testified that the wind made quite a difference; it raised the water several inches.

Mr. SCOVIL. There is a decided wind effect at times.

Mr. STEENERSON. Take the wind from the southeast blowing up across the Big Traverse, up by Bucketty Island; it would have quite a long sweep?

Mr. SCOVIL. Yes.

Mr. STEENERSON. And it would push the water into those bays and raise it more than a foot?

Mr. SCOVIL. I doubt that it would raise it that distance.

Mr. STEENERSON. What is the limit you think the wind could raise it?

Mr. SCOVIL. I could not give you the limit, but there has been an effect of six-tenths from the normal level. I think that was within the last two years.

Mr. STEENERSON. The wind has produced that effect to your knowledge?

Mr. SCOVIL. Yes.

Mr. STEENERSON. And it was not a hurricane, either?

Mr. SCOVIL. A fair wind.

Mr. POWELL. Do you mean by "six-tenths" that it was six-tenths about the normal level, or six tenths higher at one end of the lake than at the other?

Mr. SCOVIL. Above the normal.

Mr. POWELL. That makes a difference of a foot in level between the two ends of the lake?

Mr. SCOVIL. Yes. I can give you the correct figures.

TESTIMONY OF FREDERICK Y. HARCOURT, OF KENORA, ONTARIO.

(Frederick Y. Harcourt, being first duly sworn, testified as follows:)

Mr. ANDERSON. What is your occupation, Mr. Harcourt?

Mr. HARCOURT. Civil engineer, in the employ of the public-works department of Canada.

Mr. ANDERSON. How long have you been in that position?

Mr. HARCOURT. Since 1905.

Mr. ANDERSON. In whose jurisdiction are the improvements to navigation upon the Lake of the Woods and tributary waters?

Mr. HARCOURT. They are in mine at the present time, under the jurisdiction of the chief engineer of the public-works department.

Mr. ANDERSON. How long have you been in charge here?

Mr. HARCOURT. Since January, 1913.

Mr. ANDERSON. In a general way, do you know that it is the policy of the department to improve navigation upon the Lake of the Woods and some of the tributary waters?

Mr. HARCOURT. Yes, sir.

Mr. ANDERSON. Have you prepared a statement showing the amount of money that has been expended by the Government of

Canada for the improvement of navigation upon Rainy Lake, Lake of the Woods, and Winnipeg River?

Mr. HARCOURT. Yes, sir; I have.

Mr. ANDERSON. Look at this statement which I hand you and tell me if it is the statement you prepared?

Mr. HARCOURT. That is the statement I prepared.

Mr. ANDERSON. Is that statement correct?

Mr. HARCOURT. Yes, sir.

Mr. ANDERSON. That shows, in a general way, what? Describe the different kinds of work done.

Mr. HARCOURT. It shows that there has been dredging done, construction of wharves, and the removal of rock construction from one or two places on the Winnipeg River and the Lake of the Woods.

Mr. ANDERSON. What does the total expenditure amount to on Rainy River and the Lake of the Woods?

Mr. HARCOURT. For Rainy River and the Lake of the Woods the amount is \$278,858.84.

Mr. ANDERSON. What is it for the Winnipeg River?

Mr. HARCOURT. \$13,440.20.

Mr. ANDERSON. That covers a period of how long?

Mr. HARCOURT. It covers the years 1907 to 1915, inclusive, and pertains to such work as I have had any knowledge of myself.

Mr. ANDERSON. There may have been other work done before that of which you have no information?

Mr. HARCOURT. Yes, sir.

Mr. ANDERSON. The principal part of this outlay is for work on what water?

Mr. HARCOURT. The principal part is for dredging at the mouth of the Rainy River.

(The statement submitted by Mr. Harcourt is copied into the record in full, as follows:)

Statement of expenditure by public-works department, Canada, on Rainy Lake, Lake of the Woods, and Winnipeg River, 1907-1915, inclusive.

Wharf, Rainy River; elevation, 1,062.5 M. S. L.; pile construction; built, 1913; cost-----	\$3, 455. 83
Wharf, Kenora, foot of Main Street; elevation, approximately, 1,062.3 M. S. L.; pile construction; built, 1913; cost, \$8,166.82; additional for electric-light standards, \$305.47; total-----	8, 472. 29
Wharf, Kenora, near C. P. R. station; pile construction; built, 1911; approximate cost-----	13, 000. 00
Dredging, mouth of Rainy River:	
1. Through Oak Point (since filled in), done in 1907-----	8, 102. 40
2. Back of sand hills on Sable Island, 1909-----	21, 489. 73
3. Back of sand hills on Sable Island, 1910-----	56, 022. 44
4. Back of sand hills on Sable Island, 1911-----	63, 181. 35
5. Back of sand hills on Sable Island, 1912-----	24, 413. 34
6. Dredging mouth of Rainy River, Old Steamboat Channel—1913-----	13, 577. 10
1914-----	39, 524. 45
Pile protection work, Oak Point; built 1914-15; cost-----	11, 366. 29
Shoal Lake improvements; done 1914; cost-----	3, 267. 06
Dredging, Little Grassy River, approximate (1915)-----	4, 500. 00
Repairs, pier, Manitou Rapids, 1915-----	486. 56
Total, Rainy River and Lake of the Woods-----	270, 858. 84

Winnipeg River improvements:	
1912-13, approximate-----	\$5,000.00
1914-----	4,498.10
Wharf, Minaki, 1913, approximate-----	3,942.10
<hr/>	
Total, Winnipeg River-----	13,440.20
<hr/>	
Total, Rainy River and Lake of the Woods-----	270,858.84
Total, Winnipeg River-----	13,440.20
<hr/>	
Grand total-----	284,299.04

Mr. ANDERSON. The statement was made by a witness at Warroad the other day that the *Kenora* was not able to enter the mouth of Rainy River this year on account of impediment in navigation by reason of the bar there. What have you to say as to that?

Mr. HARCOURT. To the best of my knowledge there was perfectly good water for the *Kenora* to come in there at any time this summer, and I have been told that she has had no trouble at all in coming in there at any time this summer.

Mr. ANDERSON. Do you know where the trouble was?

Mr. HARCOURT. No; I have no knowledge of any trouble.

Mr. STEENERSON. I think it was Mr. Paul Marschalk who testified to that effect. I think he testified at Warroad that there was one time this last season that the boat could not get up there.

Mr. HARCOURT. Well, the boat might possibly have been off her course a bit or she might have had a breakdown, or something of that sort.

Mr. STEENERSON. You have no personal knowledge of it?

Mr. HARCOURT. No.

Mr. STEENERSON. If he testified to that effect you would not deny it, would you?

Mr. HARCOURT. No.

Mr. STEENERSON. The fishermen testified this afternoon that there was difficulty in coming up that channel.

Mr. HARCOURT. There is some confusion in the channel referred to.

Mr. STEENERSON. It is the channel back of Sandy Island?

Mr. HARCOURT. I refer to the channel right in past Oak Point; past the lighthouse.

Mr. STEENERSON. There is no channel there now, is there?

Mr. HARCOURT. Yes. That is the channel that has been dredged in the last few years.

Mr. STEENERSON. They have testified here to-day that they can not navigate that channel and that you have been dredging over by the islands.

Mr. HARCOURT. I know that the dredging in 1914 has been done by the lighthouse.

Mr. STEENERSON. Do you testify that you have dredged past the point where the fishery was?

Mr. HARCOURT. Yes; what is known as the old steamboat channel.

Mr. STEENERSON. And that has been dredged out?

Mr. HARCOURT. That has been dredged out.

Mr. STEENERSON. It has a sufficient depth to-day to allow the *Kenora*, drawing $8\frac{1}{2}$ feet of water, to pass through?

Mr. HARCOURT. Absolutely.

Mr. STEENERSON. How long has that been the case?

Mr. HARCOURT. The first part was done in 1913, and it was finished in 1914.

Mr. STEENERSON. Have you actually sounded the water there?

Mr. HARCOURT. Last year and in February, 1915.

Mr. STEENERSON. Have you done so during navigation?

Mr. HARCOURT. I have not done it during navigation.

Mr. STEENERSON. You have not been down there since navigation opened this spring?

Mr. HARCOURT. Yes; I was there.

Mr. STEENERSON. Have you seen a boat of that draft go up?

Mr. HARCOURT. No; I have not. It is not a hard matter to find out whether that boat could go down. The information could be gotten from the people on the boat, and not from me.

Mr. STEENERSON. Yes; I should think the men on the boat would know more about it.

Mr. HARCOURT. Certainly they do.

Mr. POWELL. Do you mean the channel that is in line with the two lights?

Mr. HARCOURT (after looking at map on sheet No. 16). The channel that I refer to follows, roughly, the boundary line between the United States and the Dominion of Canada.

TESTIMONY OF ALEXANDER MACKENZIE, OF KENORA, ONTARIO.

(Alexander MacKenzie, being first duly sworn, testified as follows:)

Mr. ANDERSON. What is your occupation, Mr. MacKenzie?

Mr. MACKENZIE. I have been in the steamboat business for about 21 years.

Mr. ANDERSON. What do you know about this disputed question of navigation in the mouth of the Rainy River?

Mr. MACKENZIE. I know the *Kenora* has made every trip there this summer without any difficulty.

Mr. ANDERSON. How many trips has she made?

Mr. MACKENZIE. Something over 30 trips.

Mr. STEENERSON. What channel has she gone up?

Mr. MACKENZIE. She has gone into the dredged channel; right in by the lighthouses. We came by the sand hills yesterday.

Mr. STEENERSON. I have seen boats go in two different channels. Originally when the Rainy River was without any interference it had a channel there without any dredging, right past Currys Point or Oak Point.

Mr. MACKENZIE. Did you see that breakwater there yesterday?

Mr. STEENERSON. I have not been through there for several years, but when I saw the *Kenora* years ago it went up and down the river within a few rods of that same point. When I was there the last time—two years ago—the steamboat went over east on the other side of the island.

Mr. MACKENZIE. But there has been a channel dredged since.

Mr. STEENERSON. Which channel is it that you refer to when you say that you have gone up a channel?

Mr. MACKENZIE. The channel right at the point; the channel that goes in by the lighthouse. It is buoyed. There are two lighthouses.

Mr. STEENERSON. Down on the island?

Mr. MACKENZIE. No; right by the mouth, as a guide for the mouth of the river.

Mr. STEENERSON. Then the channel that you have been using this season is the original river channel?

Mr. MACKENZIE. Yes; right out by the lighthouses.

Mr. STEENERSON. I do not know anything about the lighthouses. I know about Currys Point. I think the lighthouses when I saw them were over on the island or near the island. You do not claim they were near Currys Point?

Mr. MACKENZIE. Currys Point has formed out a little since the early days.

Mr. STEENERSON. The last time I was there the boats were going through another channel. That was two years ago. How long since that channel has been abandoned?

Mr. MACKENZIE. It is still in use.

Mr. STEENERSON. Both channels are in use?

Mr. MACKENZIE. Yes.

Mr. STEENERSON. Are you the captain that navigated the *Kenora* during this last season?

Mr. MACKENZIE. No; I am the assistant manager of the company.

Mr. STEENERSON. But you were on the boat?

Mr. MACKENZIE. I was on the boat a great deal.

Mr. STEENERSON. Did you use this channel at all?

Mr. MACKENZIE. Exclusively.

Mr. STEENERSON. Then these men at Warroad were mistaken when they said that at one time the *Kenora* could not get up there?

Mr. MACKENZIE. They certainly were.

Mr. STEENERSON. Were you delayed sometimes on account of wind.

Mr. MACKENZIE. No.

Mr. STEENERSON. You were not delayed at all this season?

Mr. MACKENZIE. Not on account of wind. We did get on a reef away out in the lake, but it is not near the mouth of the river.

Mr. STEENERSON. Well, it is in that vicinity, I suppose.

Mr. MACKENZIE. Yes.

Mr. STEENERSON. How far from Currys Point is it?

Mr. MACKENZIE. It is about 5 miles out.

Mr. STEENERSON. Is it below the islands or north of the islands?

Mr. MACKENZIE. It is north of the islands. It is off the second channel, between the second and third channels.

Mr. STEENERSON. Do you know Capt. Wheeler?

Mr. MACKENZIE. Yes.

Mr. STEENERSON. He is an old navigator on the Lake of the Woods, and lived at Wheelers Point.

Mr. MACKENZIE. I know where he lives.

Mr. STEENERSON. He has opportunities to observe the boats as they go up there, has he not?

Mr. MACKENZIE. Yes; he lives near there.

Mr. STEENERSON. He testified that the boats tied up there every time there was a hard wind.

Mr. MACKENZIE. It was not because there was not water enough to go in and out of the mouth of the river that they tied up.

Mr. STEENERSON. That is what he gave us to understand.

Mr. MACKENZIE. He was mistaken.

Mr. STEENERSON. What was the reason?

Mr. MACKENZIE. Sometimes there is a very heavy sea running and it is wise when you have a boatload of passengers not to take them out in a heavy sea and get them all seasick.

Mr. STEENERSON. I understood it was when you were going up into the river.

Mr. MACKENZIE. Wheelers Point is up in the river after you get off the lake. When you get to Wheelers Point you are out of the heavy seas.

Mr. STEENERSON. What is the depth of water in this dredged channel?

Mr. MACKENZIE. There are about 11 feet there.

Mr. STEENERSON. Was it of a sufficient depth to be navigated a year ago?

Mr. MACKENZIE. No; it was dredged out recently.

Mr. STEENERSON. Where did they navigate last year, during the season of 1914?

Mr. MACKENZIE. Beyond the sand hills.

Mr. STEENERSON. This is the first year that they have been able to resume navigation in the original channel?

Mr. MACKENZIE. Yes; for some time.

Mr. STEENERSON. That channel has been navigated during the whole navigation season?

Mr. MACKENZIE. Yes; this summer.

Mr. KEEFER. You are pretty familiar with the navigation on the Lake of the Woods, are you not?

Mr. MACKENZIE. Yes; fairly familiar.

Mr. KEEFER. You have heard the testimony of these other witnesses to-day?

Mr. MACKENZIE. Yes.

Mr. KEEFER. Do you agree with them with regard to the question of high water?

Mr. MACKENZIE. I do.

Mr. POWELL. Mr. MacKenzie, I think perhaps considerable light may be thrown upon this question by the treaty between the United States and Great Britain. By that treaty the main channel of Rainy River is to be the boundary line between the two countries. As shown on the plan there the channel referred to by you is substantially the boundary line. That settles it, because we can not go back of the treaty.

Mr. MACKENZIE. I know nothing about the treaty.

TESTIMONY OF FREDERICK Y. HARCOURT—Recalled.

(Frederick Y. Harcourt, who had previously testified, resumed the stand and testified further as follows:)

Mr. ANDERSON. Mr. Harcourt, you have just heard Mr. MacKenzie's statement that the channel behind the sand hills was not navigated last year and has not been for two or three years.

Mr. STEENERSON. Last year it was navigated.

Mr. ANDERSON. Yes; that is right. Mr. Harcourt, what is the cause of that interference with navigation there?

Mr. HARCOURT. Do you mean what is known as Sable Island?

Mr. ANDERSON. It is the bar at Oak Point.

Mr. HARCOURT. Oak Point, I fancy, is a sand bar that is gradually being built out and extended by wave action, causing the sand to be carried farther out. With that idea in mind, we put what we call pile protection there to catch that sand, with the idea that it would gradually build up and form a natural breakwater there itself and so protect the channel.

Mr. ANDERSON. Do you mean the action of the waves from the lake or from the river?

Mr. HARCOURT. The waves from the lake, from the outer side in washing along.

Mr. LAIRD. Does the high water level have any effect in the way of filling up the mouth of the river? There has been considerable filling up in recent years. How do you account for it?

Mr. HARCOURT. That is a pretty large question. It is probably a combination of all these causes, winds and currents and erosion generally sweeping the sand in. I do not know that the high water would make a great deal of difference, except that it would possibly come up on the beach a little farther and have a little more scope.

Mr. LAIRD. At any rate, it is not due solely to high water?

Mr. HARCOURT. Not by any means.

Mr. LAIRD. Has the flow in Rainy River any effect on it? Is that one of the elements?

Mr. HARCOURT. I could not say that the flow in Rainy River has any effect on it.

Mr. LAIRD. If the flow in Rainy River were less than it was in former years what effect would that have in keeping the mouth of the river open?

Mr. HARCOURT. I could not say that it would have any particular effect. The channel that is followed is very winding. It seems to shift from one side to the other. I think the water gets diverted around one way.

Mr. STEENERSON. What is the total you have spent on the mouth of Rainy River?

Mr. HARCOURT. That information is all on the statement that I furnish.

Mr. STEENERSON. What money was spent on the channel on the other side of the islands?

Mr. HARCOURT. Roughly speaking, \$170,000 was spent.

Mr. STEENERSON. Roughly speaking, how much was spent on this original channel?

Mr. HARCOURT. \$55,000.

Mr. CAMPBELL. Mr. Harcourt, at the mouth, where the water is confined, it is how far from Turners Point?

Mr. HARCOURT. From Oak Point, do you mean?

Mr. CAMPBELL. Yes; at the north end of Oak Point.

Mr. HARCOURT. It is merely guesswork on my part. I should think from a mile to a mile and a half.

Mr. CAMPBELL. And between the mouth of the river that has bounds and the end of Oak Point, how wide is the water stretch that you see there?

Mr. HARCOURT. It must be very nearly a mile.

Mr. CAMPBELL. If it were by itself it would be a small lake?

Mr. HARCOURT. Yes; it would really be a small lake.

TESTIMONY OF C. W. BELYEA.

(C. W. Belyea, having been duly sworn, testified as follows:)

Mr. ANDERSON. What is your occupation?

Mr. BELYEA. Dominion fishery agent.

Mr. ANDERSON. Where are you stationed?

Mr. BELYEA. Kenora.

Mr. ANDERSON. Have you charge of the lighthouses, and buoys, and signals in connection with navigation?

Mr. BELYEA. Yes.

Mr. ANDERSON. Have you a statement there, showing how much money the Dominion Government has spent in the erection of light-houses, buoys, and other signals for the navigation purposes on the Lake of the Woods?

Mr. BELYEA. Well, by the records of the office, we have seven lighthouses; two electric lights, which are stationed at Devils Gap, at an approximate cost of about \$25,000; and the upkeep would amount to about \$3,000 a year.

Mr. ANDERSON. Then, in addition to that?

Mr. BELYEA. We have 250 buoys on the Lake of the Woods, 20 on Shoal Lake, and 21 on Winnipeg River.

Mr. ANDERSON. What did they cost, approximately?

Mr. BELYEA. Well, the buoys, including the moorings, would run about between \$4,500 and \$5,000.

Mr. ANDERSON. And their upkeep?

Mr. BELYEA. Their upkeep would be about \$1,000 a year.

Mr. ANDERSON. And that covers it?

Mr. BELYEA. That covers it.

Mr. POWELL. Who maintains those beacon lights at the mouth of the Rainy River?

Mr. BELYEA. The Dominion Government.

Mr. ANDERSON. Does the United States participate at all?

Mr. BELYEA. No; they are not on United States territory; all Dominion territory.

(The commission adjourned until 10 o'clock to-morrow.)

KENORA, *September 14, 1915.*

The commission met at 10 o'clock, pursuant to adjournment.

Present: All the members except Mr. Glenn.

TESTIMONY OF E. J. CHERRY.

(E. J. Cherry, having been duly sworn, testified as follows:)

Mr. McLENNAN. You are the manager of the Lake of the Woods Milling Co. at Keewatin?

Mr. CHERRY. The local manager at Keewatin; the general manager is situated at Winnipeg.

Mr. McLENNAN. How long have you been connected with the company at Keewatin?

Mr. CHERRY. Since June, 1888.

Mr. McLENNAN. Will you give us your ideas with respect to the water levels as affecting your navigation interests?

Mr. CHERRY. Well, I might just state that we have a stave factory, heading mill, and barrel factory at Keewatin that is absolutely dependent upon the supply of poplar timber from the southern end of the lake, and it is necessary that the water be at a high stage to enable us to get the logs down. During the low period of 1910 and 1911 we had considerable trouble in getting the logs out of the Whitefish Channel. It was necessary to transport an engine up there and haul the logs out to sufficient water to float them so that they could be boomed. We have invested in plant and equipment \$95,000. We require a yearly supply of approximately 42,000 or 45,000 logs. Those are manufactured into staves—about 6,000,000 staves, 1,500,000 pieces of heading—which make approximately 250,000 barrels. The value of the barrels and output of the factory is about \$132,000. We pay out in wages for the labor to manufacture the staves and the barrels in the neighborhood of \$47,600 annually, and this is absolutely dependent on a sufficient stage of water to enable us to get our timber down.

Mr. POWELL. What does your material cost you?

Mr. CHERRY. The material costs us about \$4.50 per cord delivered at the factory; that includes Government dues of 80 cents per cord.

Mr. POWELL. And how many cords do you use?

Mr. CHERRY. Between about 4,000 and 5,000 cords per annum.

Mr. McLENNAN. Now, proceeding from there, can you tell us what bearing the water levels have on the getting in of your raw material?

Mr. CHERRY. Well, during low seasons, it costs considerable more. Of course I have only a record of one year of low water; that is the summer of 1911.

Mr. McLENNAN. Tell us the facts in that year.

Mr. CHERRY. It just cost us 50 per cent more to get the timber in that season.

Mr. McLENNAN. From what part of the surrounding district do you get your timber?

Mr. CHERRY. We have got timber at Little and Big Grassy, also from Big Island, Sabiskong, and the Long Bay on the Whitefish Channel, and other parts of the lake that I could not state specifically.

Mr. McLENNAN. You understand that those obstacles of navigation are general in the various portions of the lake?

Mr. CHERRY. Yes.

Mr. McLENNAN. Where timber is obtained?

Mr. CHERRY. Yes; not from a personal knowledge. I have not been out with the tug when they were towing, but in discussing the matter with the crew and captain when they came back during the low period apparently at points the boom would strike the shore and would lose a number of logs; but during the high water there is not that danger.

Mr. McLENNAN. When was your mill erected?

Mr. CHERRY. The erection was during the spring of 1887; it was completed and started in October, 1888.

Mr. McLENNAN. Have you had any erecting in that connection in recent years?

Mr. CHERRY. Yes; the first plant erected there, which is now described as mill C, was built later; that was originally built by the

Keewatin Lumber Co., and afterwards the Lake of the Woods Milling Co. secured control of it before it was put in operation.

Mr. POWELL. You are now speaking of the flour mills?

Mr. CHERRY. Yes.

Mr. McLENNAN. But you have not recently erected any stave mills, or anything of that kind?

Mr. CHERRY. Some three years ago, when the plants were burned out, we enlarged the stave mill and rebuilt the heading factory more permanently than the old building.

Mr. McLENNAN. How are those mills situated with respect to water levels at Keewatin, has it any bearing on it?

Mr. CHERRY. Yes; the power certainly has a bearing on the levels. We get our power by—

Mr. McLENNAN. Without going into that, because it is not desirable, I did not know whether the water levels might have a bearing on the operation of your stave mills.

Mr. CHERRY. Yes; to a certain extent, the power for the stave mill is supplied from the power at the mills.

Mr. McLENNAN. Only from the power?

Mr. CHERRY. Only from the power standpoint and the towing standpoint.

Mr. POWELL. Do you know the amount of the investment altogether for your flour mill and barrel mill and everything else?

Mr. CHERRY. We are capitalized for \$4,600,000, made up of common stock \$2,100,000, preferred \$1,500,000, bonds \$1,000,000. In addition to the above we have \$750,000 bonds of the Keewatin Flour Mills that we have guaranteed payment and will become due and payable in 1916.

Mr. McLENNAN. Is there much water in it?

Mr. CHERRY. No, sir; we have the assets to cover it.

Mr. TAWNEY. Have you assets to cover your total stock and bond liability?

Mr. CHERRY. Yes; I may just state that that does not cover the plant at Keewatin only; we have 137 elevators in the West, with an average capacity of 30,000 bushels; we have mills at Portage la Prairie and Medicine Hat, which are also included in the amount of capitalization I have just given you.

Mr. POWELL. Can you give us the capital invested here at the Lake of the Woods?

Mr. CHERRY. No; I am not prepared to give you that just now, but I can give you that at a later date.

Mr. TAWNEY. Approximately, what proportion of your capitalization is represented by the investment in the Lake of the Woods?

Mr. CHERRY. Well, there is all of four-fifths. I might just state that the capacity of the mills is in the neighborhood of 9,500,000 barrels a day, and the capacity at Portage la Prairie 1,500 and at Medicine Hat 1,000, so that that will give you an idea that the mills at Portage la Prairie and Medicine Hat are of very inferior construction to the mills here, and cost much less.

Mr. TAWNEY. And the capacity is much less?

Mr. CHERRY. Yes.

Mr. POWELL. Relatively less?

Mr. CHERRY. Yes.

Mr. McGRATH. What is your stock selling at, at the present time?

Mr. CHERRY. It has not been quoted for some time. The last quotation I saw was common 129 and preferred 124. It was up as high as 132 during the winter months, but it is not quoted daily at the present time.

Mr. POWELL. Are they 6 per cent bonds?

Mr. CHERRY. Six per cent bonds, preferred 7 per cent.

Mr. LAIRD. You said you were connected with the company since 1888; prior to that did you live in this district?

Mr. CHERRY. No, sir; I came——

Mr. LAIRD. You have no knowledge of conditions prior to 1888?

Mr. CHERRY. No.

Mr. LAIRD. The other flour mill, the Maple Leaf Flour Mill Co., is a smaller plant than yours?

Mr. CHERRY. Well, I would not like to make that statement. It is an opposition firm, and I would not like to compare the capacity.

Mr. LAIRD. What year was it built?

Mr. CHERRY. I really could not answer that question.

Mr. TAWNEY. When was the other mill burned?

Mr. CHERRY. I could not answer that question. I really do not know; I remember when it was built. The original mill was destroyed by fire, and the present mill running and in operation was of later construction.

Mr. POWELL. You have a representative here to give testimony?

Mr. McCLENNAN. No; there is no representative.

Mr. LAIRD. Approximately, when was the Maple Leaf factory rebuilt? Five years ago or less?

Mr. CHERRY. I think it is fully five years, and provably seven years, since they started erecting the first——

Mr. LAIRD. Can you not tell us approximately the capacity of the two mills, without going into any question of quantity?

Mr. CHERRY. Well, the capacity, as locally known, is about 3,500 barrels.

Mr. LAIRD. Three thousand five hundred barrels a day?

Mr. CHERRY. Yes; but I have no knowledge that that is the fact; it is merely a statement that I picked up.

Mr. STEENERSON. What did it cost to get the logs down in 1911? You said it cost 50 per cent more than before.

Mr. CHERRY. It cost \$1.05 a cord to tow them.

Mr. STEENERSON. And formerly it cost how much?

Mr. CHERRY. It cost between 45 and 50 cents, dependent altogether on the distance they were to be towed. In bringing them from Little Grassy it cost more than from Big Island, and more from Big Island than Sabiskong.

Mr. STEENERSON. You said it cost 50 per cent more. I am trying to find out how much that would be. I suppose you mean the relative cost?

Mr. CHERRY. At the relative cost of towing. I may say we operated in that particular portion for two years, and I am basing that 50 per cent more on the previous season's towing.

Mr. STEENERSON. The distances were the same in the dry year as in the wet year that you told us about?

Mr. CHERRY. Well, practically the same from Long Bay.

Mr. STEENERSON. Of course it would be exactly the same from Long Bay in a dry season——

Mr. CHERRY. But in my estimate I had reference particularly to the year we were towing from Long Bay.

Mr. STEENERSON. How was it when you were operating from some other places? Did you tow from any other places in the low-water year?

Mr. CHERRY. We did not tow from any other place in the low-water year. In order to explain I may say we have only a small tug, and about three or four tows brings in all the lumber we require for the stove factory.

Mr. STEENERSON. What shape was this in—what lengths?

Mr. CHERRY. Well, it would run from 16 to 20 foot lengths.

Mr. STEENERSON. It would be very similar to saw logs?

Mr. CHERRY. It would be very similar, I presume, to saw logs, only that the poplar, being a heavier timber, was a little lower in the water and requires a little more care in towing.

Mr. STEENERSON. Mostly poplar?

Mr. CHERRY. All poplar; we do not use anything else.

Mr. STEENERSON. And there was not any limit to the size of the logs?

Mr. CHERRY. No; there were various sizes. Our sizes ran from 9 to 16 inches; that is about the smallest we cut—9-inch top with 16-inch butt.

Mr. STEENERSON. So that outside of that dry year, 1911, it only cost about 52½ cents.

Mr. CHERRY. Well, that would depend on the distance, as I stated before, that the logs were to be towed.

Mr. STEENERSON. I thought you only towed one distance?

Mr. CHERRY. That is in the year 1911. I made the statement that we had operated at Little and Big Grassy and we had operated at Big Island and Sabiskong Bay.

Mr. STEENERSON. Was this 1911 towing from Long Bay?

Mr. CHERRY. From Long Bay.

Mr. STEENERSON. Is that a long or short distance?

Mr. CHERRY. It is what we would consider a short distance.

Mr. STEENERSON. Does that represent actual computation, or is it only an estimate?

Mr. CHERRY. It represents actual cost of each year compared——

Mr. STEENERSON. You have compared 1911 with the other years?

Mr. CHERRY. Yes; with the other years.

Mr. STEENERSON. Instead of computing it, as you do lumber or logs, by the thousand feet, you computed it by the cords?

Mr. CHERRY. Yes.

Mr. STEENERSON. Is there very much difference? Does 1,000 feet board measure of log make more than a cord?

Mr. CHERRY. It would make more than a cord, ordinarily two cords or two cords and a half.

Mr. STEENERSON. I know the lumbermen in Crookstown used to charge three and a half to drive logs from Red Lake River down to Crookston per thousand?

Mr. CHERRY. In early days, before we had a steamer, usually cost us from a dollar to a dollar and a quarter a cord to tow; with our own plant and equipment we do it for less.

TESTIMONY OF E. F. KENDALL.

(E. F. Kendall, having been duly sworn, testified as follows:)

Mr. McLENNAN. You are a steamboat captain on the Lake of the Woods?

Mr. KENDALL. Yes.

Mr. McLENNAN. Since what year?

Mr. KENDALL. Oh, I can not say; probably 15 or 10 years ago.

Mr. McLENNAN. Since what date have you been engaged one way and another on the Lake of the Woods?

Mr. KENDALL. Since 1883.

Mr. McLENNAN. You have for many years been engaged in the lumbering business?

Mr. KENDALL. Nearly that length of time.

Mr. McLENNAN. What do you say as to the condition of the Lake of the Woods as to water levels in the years 1883 to 1887, as compared with those later on?

Mr. KENDALL. We had a much greater variation of levels during those years. I can not say which year; I do not recollect the exact date, but about that time we had the highest and lowest water I have ever seen on the lake.

Mr. TAWNEY. About how long did the high water continue?

Mr. KENDALL. That I can not say; it comes up gradually, and we generally notice it is high, and then after a while we notice it getting low; we do not have any particular mark to examine from day to day.

Mr. MIGNAULT. Are you speaking of conditions before 1888?

Mr. KENDALL. Yes.

Mr. TAWNEY. Would you have a permanent stage for a month of high water?

Mr. KENDALL. Possibly; hardly not for such a length of time; I would say it is very hard for a man who does not take actual daily observations to say, because we have nothing to go by. The winds make a difference of several inches probably, and we just note whether it is high or low.

Mr. McLENNAN. The variation was considerably greater in those years in the course of a season than since that time?

Mr. KENDALL. Oh, very much.

Mr. McLENNAN. Do I understand you to say that from year to year the water went up to practically the same high levels that it is since?

Mr. KENDALL. It went higher one season than I have ever seen it since.

Mr. McLENNAN. You can not tell us what year that was?

Mr. KENDALL. No; I can not. It seems to me it would be 1886 or 1887 it was the highest in the fall; it came up late in the season; it was low in the spring; I think that was either 1887 or 1888.

Mr. McLENNAN. Some parts of 1886 were extremely low?

Mr. KENDALL. Yes; I think in the fall of 1886 it would be the extreme high water.

Mr. McLENNAN. The extreme high water would be the fall of 1886?

Mr. KENDALL. Yes.

Mr. McLENNAN. To a higher level than you have seen it since?

Mr. KENDALL. Yes.

Mr. McLENNAN. What would you say as to the general levels from the navigating standpoint in these years? I do not mean for the length of season, but for a portion, at all events, of the season generally.

Mr. KENDALL. Well, they varied a great deal. Of course I do not recollect closely, but I know we had some very low water and on this one occasion high water. Where we noticed the lake would begin to go down the logs would begin to hang, and the rest would come up and begin to catch us, and the boat would begin to drag.

Mr. McLENNAN. Would you tell us your experience in the transportation of logs? I understand you have had considerable experience.

Mr. KENDALL. Well, in the first place, in very low water we have trouble going into Rainy River. I have had a good deal, in times gone by, and Grassy River and other places, where we go up on this end of the lake; then when we get away from the shores the channels are very much narrowed up by the reefs coming up here and there.

Mr. McLENNAN. In the main channel?

Mr. KENDALL. Yes; in the main channel, not in the middle of the channel, but the channels narrow as they go up; the tow of logs swings and catches.

Mr. McLENNAN. What is the result?

Mr. KENDALL. Well, we lose time and logs.

Mr. TAWNEY. When you speak of navigating the lake, do you include the navigation of the Rainy River also?

Mr. KENDALL. Yes.

Mr. McLENNAN. Is that the general course of through navigation on the Lake of the Woods?

Mr. KENDALL. We have to go everywhere, and the larger portion of the logs at that time were towed from Rainy River.

Mr. McLENNAN. How long is Rainy River?

Mr. KENDALL. I should say about 100 miles.

Mr. McLENNAN. How far is it from Kenora to the mouth of the Rainy River?

Mr. KENDALL. I take it, it is 77 on the outside channel.

Mr. McLENNAN. What is it on the inside channel?

Mr. KENDALL. About 90 to the fishery there; that is what we call the mouth of the river.

Mr. KEEFER. I think you were interested in the mining industry here in the early days?

Mr. KENDALL. Yes.

Mr. KEEFER. Would you give us a short description of what that was so that we may see what it may be again?

Mr. KENDALL. The mining?

Mr. KEEFER. Yes.

Mr. KENDALL. Oh, well, it was pretty lively in those days. We had a lot of work in mining.

Mr. KEEFER. Producing mines?

Mr. KENDALL. Well, they did produce.

Mr. KEEFER. I mean producing bullion?

Mr. KENDALL. Yes.

Mr. KEEFER. About how many, do you know?

Mr. KENDALL. There was the Sultana, the Regina, the Mikado, and a few others, they were the heaviest producers, but there were a great many producers.

Mr. KEEFER. How many properties, roughly speaking, would be worked?

Mr. KENDALL. There was a time when, I presume, there were more than 100 properties working, large and small.

Mr. POWELL. Largely consumers?

Mr. KENDALL. Yes, a great deal of cordwood and other things.

Mr. KEEFER. Do you agree with others who have said that they were absolutely dependent on navigation?

Mr. KENDALL. Some of them, in fact most of them were, for they were absolutely for the transportation of supplies.

Mr. KEEFER. And men, I suppose?

Mr. KENDALL. Yes.

Mr. KEEFER. Were many of them on the islands?

Mr. KENDALL. Yes.

Mr. KEEFER. Had they heavy machinery?

Mr. KENDALL. Yes; they had heavy machinery.

Mr. KEEFER. Following up Commissioner Tawney's question about Rainy River, if a lock were put in at the Long Sault Rapids, there would be no question of navigation at Fort Frances?

Mr. KENDALL. No; that would settle the whole thing up there.

Mr. KEEFER. And if the lock were completed at Fort Frances, they would go on up there farther?

Mr. KENDALL. I do not know so much about that; in fact, I know nothing about Fort Frances.

Mr. ANDERSON. Now, proceeding with the navigation, from what part of the district does the timber of to-day come principally?

Mr. KENDALL. Well, I presume now it would come from Whitefish Bay and Long Bay, and from the Grassy Rivers. Of course, there was a large amount of timber came down the river, but it appears they saw it at Baudette, or ship it to Winnipeg; they do not cross so much of it over the lake as they used to.

Mr. ANDERSON. Are there considerable timber areas in those districts you have referred to?

Mr. KENDALL. There are.

Mr. ANDERSON. And the areas of Whitefish Bay and those other places—are they of considerable extent?

Mr. KENDALL. Yes.

Mr. ANDERSON. Is there any question about there being a large quantity of timber on the Lake of the Woods yet?

Mr. KENDALL. Well, tributary to the Lake of the Woods, a large amount.

Mr. ANDERSON. Are there any difficulties in the transportation of logs from the Whitefish territory?

Mr. KENDALL. Not in a good stage of water.

Mr. ANDERSON. Will you tell us at what stage of water you get trouble?

Mr. KENDALL. I guess as soon as it begins to go down an inch from where it is now.

MR. ANDERSON. You think that it is at present at the lowest stage where the transportation of logs from that part of the country can be carried on successfully?

MR. KENDALL. It is plenty low enough to-day for that.

MR. ANDERSON. As it goes lower, what do you find?

MR. KENDALL. The narrows become narrower, and the shallow spots more shallow, and the weeds begin to come up alongside the channel.

MR. ANDERSON. Will you describe the conditions that prevail any other place?

MR. KENDALL. What place?

MR. ANDERSON. Whitefish Narrows; all logs from that part of the district have to come from Whitefish Narrows?

MR. KENDALL. All have to come from Snake Bay or down the Whitefish Rapids. The greater proportion of the logs come down Whitefish Rapids, and through Sault Narrows, and around what they call the Whitefish Traverse and Barnets Narrows, and Whitefish Narrows—

MR. ANDERSON. So that there is a whole series of narrows?

MR. KENDALL. Narrows after narrows.

MR. ANDERSON. Through which they have to be brought?

MR. KENDALL. Yes.

MR. ANDERSON. Is there more than one of these narrow channels that gives difficulty in the towing of logs?

MR. KENDALL. They all do; the Sault Narrows, I suppose, is the worst.

MR. ANDERSON. And does the water level have a similar bearing on them all?

MR. KENDALL. It does; and the Sault Narrows. If the water was a little higher than it is to-day there would be no trouble in getting through; there is a big reef right in the center, and it is the deuce of a job to get through in low water.

MR. ANDERSON. Will you briefly describe some of the other places you have to go through coming from that territory?

MR. KENDALL. You strike reasonable water from there to Barnets Narrows and then you strike a narrow channel, probably half a mile or more in length, scarcely wide enough to bring an ordinary traverse tow through; as the water drops it begins to narrow, and when you get to Whitefish Narrows they are crooked, with another reef in the center, and little reefs growing up pretty near the surface all around. It is a pretty hard place to get through, even with the best stages of water; sometimes you would be there for a day or more; in fact, I have been there three days.

MR. ANDERSON. The water conditions not being favorable?

MR. KENDALL. In low water.

MR. ANDERSON. What results, other than delay?

MR. KENDALL. The logs going through narrows are sticking on reefs, and you lose logs; they are recovered again, most of them.

MR. ANDERSON. Can you give an estimate of what it means in percentage of cost—the low-water conditions?

MR. KENDALL. Low water?

MR. ANDERSON. And real good water, a little better than to-day.

MR. KENDALL. It costs twice as much in low water as it would to-day.

MR. ANDERSON. Have you given us the principal features with regard to the transportation of logs from the Whitefish Bay district?

MR. KENDALL. Yes.

MR. ANDERSON. In Whitefish Bay there are a number of smaller bays, are there?

MR. KENDALL. Yes.

MR. ANDERSON. Do you experience any trouble in them?

MR. KENDALL. Yes.

MR. ANDERSON. Tell us what that trouble is?

MR. KENDALL. Well, the narrows and shallow places, reefs, similar things everywhere we go.

MR. ANDERSON. You spoke of Snake Bay; what have you to say about that?

MR. KENDALL. I have had considerable work in there, and it gets smaller and smaller as you go in; outer Snake Bay is easy, but the second bay, there is a channel going into it probably about as wide as this room and to-day there would be 7 feet of water in it, not any more than 7 feet, and it is a narrow place to get logs out, and if the water went any lower, it would be hard to get a 6-foot boat into it.

MR. ANDERSON. Are there any other places in there that present difficulties of that kind?

MR. KENDALL. Well, not as bad; that is the narrowest place I know of.

MR. ANDERSON. I understand that Camp Bay is another point?

MR. KENDALL. Camp Bay is shallow in low water and reefy in places.

MR. ANDERSON. You have had difficulty there?

MR. KENDALL. Nothing very great; no.

MR. ANDERSON. Can you tell us any other places where you have had similar trouble?

MR. KENDALL. Well, Grassy Bay is a shallow bay just beyond Camp Bay.

MR. ANDERSON. Is that a lumbering place?

MR. KENDALL. Well, I have not taken logs out of that myself, but I have seen others have a lot of trouble.

MR. ANDERSON. And the northwest Angle River, I understand, gives some trouble; do you know anything about that?

MR. KENDALL. That is a narrow, shallow ditch; you can not navigate that in low water.

MR. ANDERSON. Is it of importance to navigate that?

MR. KENDALL. I never had much of importance to do up there. There is a Hudson Bay post there.

MR. ANDERSON. Do you know if others have had trouble?

MR. KENDALL. I do not.

MR. ANDERSON. Is it a river of considerable extent?

MR. KENDALL. I guess about 12 miles.

MR. ANDERSON. Is there any settlement or anything up there?

MR. KENDALL. Yes; some farmers live up there.

MR. ANDERSON. It is settled along the river?

MR. KENDALL. Yes.

MR. ANDERSON. On both sides?

MR. KENDALL. I think it is an Indian reserve on the right, until you get up above the navigable portion, and just at the head of what we call the navigable water, where the Hudson Bay post used to be,

it is farms and there are some families settled in there and down to the left, and on this side, on the Minnesota side, there is quite a few settlers.

Mr. ANDERSON. Have they any means of getting in and out except by water?

Mr. KENDALL. No.

Mr. ANDERSON. In lower water, than the present day, I understand you say they would have difficulty getting around?

Mr. KENDALL. Pretty bad getting around. Of course, these people were not there at low-water times; these are new settlers.

Mr. ANDERSON. They were not there prior to 1887, at times when the water went very low?

Mr. KENDALL. No.

Mr. ANDERSON. Have you referred to the difficulties which are met with on the several tow channels coming into Kenora and Keewatin?

Mr. KENDALL. Yes.

Mr. ANDERSON. Are there any others that occur to you?

Mr. KENDALL. Well, similar conditions exist all along the towing channel, as far as the depth and width is concerned, except just perhaps in crossing the traverse for 7 or 8 miles, and other little stretches. Of course, everywhere you have some little open stretches where it is nice going, and the difference in the stage of the water would not make any noticeable difference there; we never have any trouble except the winds.

Mr. ANDERSON. What do you say as to the year 1911? How did you find the water conditions in that year?

Mr. KENDALL. Four years ago. I think they were low that year; either that year or the year before.

Mr. ANDERSON. That is the year of low water?

Mr. KENDALL. Yes; it was pretty low that year.

Mr. ANDERSON. Did you have any difficulty that year?

Mr. KENDALL. Lots of it.

Mr. ANDERSON. Can you tell what it resulted in with you, in the way of increased cost?

Mr. KENDALL. Well, it cost me about all the logs were worth to get them out of Little Grassy River and along what we call the north shore and around Buds and Spruce Creek. I got quite a number of logs from there that season, and it was very low water.

Mr. ANDERSON. Did you manage to get all your logs out that year?

Mr. KENDALL. Yes, I think I did. I had a lot on Big Grassy that I had trouble with that year.

Mr. ANDERSON. What milling operations have you had?

Mr. KENDALL. A tie mill; in cutting ties, principally.

Mr. ANDERSON. About what would be the amount of capital invested in your plant?

Mr. KENDALL. In the outfit?

Mr. ANDERSON. In your complete outfit.

Mr. KENDALL. Oh, I would say somewhere between \$60,000 and \$70,000.

Mr. ANDERSON. Does that include a steamer?

Mr. KENDALL. Yes.

Mr. POWELL. What do you value her at?

Mr. KENDALL. She cost \$13,500.

Mr. ANDERSON. How old is she?

Mr. KENDALL. About 19.

Mr. ANDERSON. Is she retopped or anything?

Mr. KENDALL. No, sir.

Mr. STEENERSON. Are these waters you speak of as Whitefish Bay and Snake Bay part of the Lake of the Woods, or tributary?

Mr. KENDALL. Well, they are part; on the same level.

Mr. STEENERSON. They are connected with channels?

Mr. KENDALL. Yes; you go into them with steamboats.

Mr. STEENERSON. How is that?

Mr. KENDALL. They are connected by channels.

Mr. STEENERSON. I always supposed they had to portage to go over to Whitefish Bay.

Mr. KENDALL. No.

Mr. STEENERSON. There are some waters where you portage to get into them?

Mr. KENDALL. Not necessarily.

Mr. STEENERSON. How is Whitefish Lake?

Mr. KENDALL. You are thinking of Whitefish Lake; that is at the head of Whitefish Rapids.

Mr. STEENERSON. That is a separate body of water?

Mr. KENDALL. Yes; that is a separate body of water back from Whitefish Bay.

Mr. STEENERSON. When did they first begin mining operations?

Mr. KENDALL. Probably in 1882.

Mr. STEENERSON. And continued for how many years?

Mr. KENDALL. Well, it is still continued.

Mr. STEENERSON. But these numerous mines you spoke of?

Mr. KENDALL. Well, there was a boom on which collapsed.

Mr. STEENERSON. Four or five years; did it last that long?

Mr. KENDALL. Yes, I think it lasted longer than that, probably; I think the Sultana mine must have produced for about 10 years.

Mr. STEENERSON. And the others for a shorter period?

Mr. KENDALL. Yes.

Mr. STEENERSON. During those early years they had high and low water, you say?

Mr. KENDALL. Yes.

Mr. STEENERSON. But they still operated the mine?

Mr. KENDALL. They did.

Mr. STEENERSON. How was it in wintertime?

Mr. KENDALL. There was very little done in mining here, and, in fact, practically no production until about 1889 or 1890.

Mr. STEENERSON. You changed that?

Mr. KENDALL. I have not changed it, but I say there was practically no production, it was in an earlier prospecting stage; there was very little done in the mining.

Mr. STEENERSON. Well, they opened the mine, did they not?

Mr. KENDALL. But they were prospecting and doing some development in various places.

Mr. STEENERSON. How was it in winter? Did they close operations in the winter?

Mr. KENDALL. Oh, no; they hauled stuff over the ice; traveled over the ice.

Mr. STEENERSON. And took out stuff over the ice too?

Mr. KENDALL. Oh, yes.

Mr. STEENERSON. This was gold, mostly.

Mr. KENDALL. Gold.

Mr. STEENERSON. And they could haul the gold out on the ice to town; there was not so much of it they could not haul it?

Mr. KENDALL. I have hauled ore to the extent of a number of hundred tons.

Mr. STEENERSON. Did they not reduce it over there to bullion?

Mr. KENDALL. I at one time recollect being driven into a snow drift by 70 pounds of brick. I was pitched out of the rig where I had to portage and the brick struck me and drove me down further.

Mr. STEENERSON. That was gold bricks?

Mr. KENDALL. Yes.

Mr. STEENERSON. Real gold brick?

Mr. KENDALL. The real thing.

Mr. STEENERSON. And they were reduced from the ore right there at the mine?

Mr. KENDALL. They were; they were reduced to the value of about \$19 an ounce.

Mr. STEENERSON. Now, the Rainy River was where you got most of the logs in the early days, was it not?

Mr. KENDALL. Yes.

Mr. STEENERSON. And how long did you navigate up there? During what period of time?

Mr. KENDALL. I think when I worked there first I was logging on a steamboat; in 1885 probably would be my first trip to Rainy River logging.

Mr. STEENERSON. How far up did you go?

Mr. KENDALL. We took a tow at the boom.

Mr. STEENERSON. You went up as far as Rainy River?

Mr. KENDALL. The boom was then just about where Baudette is now.

Mr. STEENERSON. Above the mouth of the Baudette River?

Mr. KENDALL. Yes; probably a couple of miles above there, on the American side.

Mr. STEENERSON. The logs were all cut on the American side in those days?

Mr. KENDALL. I could not say as to that.

Mr. STEENERSON. The boom was on the American side?

Mr. KENDALL. Yes.

Mr. STEENERSON. You have heard something about that?

Mr. KENDALL. I have heard such statements.

Mr. STEENERSON. They helped themselves in those days?

Mr. KENDALL. I do not know; I was not logging there, only towing.

Mr. STEENERSON. That is when Dennis Ryan and his associates were logging up there. How long did you continue to navigate Rainy River?

Mr. KENDALL. Well, we never continued to navigate Rainy River, because we were scattered all over the lake; probably next trip I went to Whitefish Bay.

Mr. STEENERSON. You went there several times a year?

Mr. KENDALL. Yes; I have been there nearly every year; some seasons I have not been there at all.

Mr. STEENERSON. Clear up—of late years?

Mr. KENDALL. Yes; for instance, last year I took a tow up Rainy River.

Mr. STEENERSON. What did you tow up there?

Mr. KENDALL. Poplar.

Mr. STEENERSON. Clear up to International Falls?

Mr. KENDALL. No; not up the rapids; we only went up as far as Rainy River, to the stave mills there.

Mr. STEENERSON. What draft boat did you use when you first navigated the Rainy River?

Mr. KENDALL. Probably a boat drawing 7 feet, or between 6 and 7.

Mr. STEENERSON. The channel then was close to the point?

Mr. KENDALL. Very close, and deep water; there was 16 feet of water right around there by the fishery.

Mr. STEENERSON. Right close to the fishery?

Mr. KENDALL. Yes.

Mr. STEENERSON. And a year ago did you navigate that same stream?

Mr. KENDALL. No; we did not run near there.

Mr. STEENERSON. You ran over the other side of the island?

Mr. KENDALL. The channels have changed very much about that point.

Mr. STEENERSON. Have you been there since they opened the old channel?

Mr. KENDALL. Yes.

Mr. STEENERSON. You have been there this year?

Mr. KENDALL. Yes.

Mr. STEENERSON. That is about exactly in the old place?

Mr. KENDALL. No; it is not in the old place.

Mr. STEENERSON. What is the difference?

Mr. KENDALL. Not a great deal of difference; it is straightened out and a little farther to the northeast, I would say; nothing to amount to anything, but a few yards, maybe a hundred.

Mr. STEENERSON. When you first knew the mouth of the Rainy River that point was a continuous strip of land, was it not?

Mr. KENDALL. No.

Mr. STEENERSON. What was it?

Mr. KENDALL. Just a point; it looked very much as it does now, except for the work which has been done there.

Mr. STEENERSON. You disagree with the other witnesses who have testified that it was a continuous point?

Mr. KENDALL. I can not help that.

Mr. STEENERSON. You were never at that point when it was continuous?

Mr. KENDALL. I never saw it continuous.

Mr. STEENERSON. Never saw it continuous; did you travel along on it?

Mr. KENDALL. In fact, I have brought tows right down behind that point, right through Four Mile Bay.

Mr. STEENERSON. And there was a fishery there as long ago as 1898 or 1899?

Mr. KENDALL. That was part of the way down.

Mr. STEENERSON. At the beginning of the point at the end of Four Mile Bay?

Mr. KENDALL. Well, there has been a fishery there always—not always, but the last——

Mr. STEENERSON. It has been washed away several years?

Mr. KENDALL. Were you on the boat coming down the other day?

Mr. STEENERSON. No; I mean the fishery at the end of Four Mile Bay.

Mr. KENDALL. There was never a fishery at the end of Four Mile Bay; there was a fishery down there about a mile and a half or 2 miles.

Mr. STEENERSON. There were three fisheries on that point.

Mr. KENDALL. Well, if there was I never saw them and I was there, going from one to the other of these fisheries.

Mr. STEENERSON. Where was the fishery?

Mr. KENDALL. The one you are thinking of was at Zippel's.

Mr. STEENERSON. Oh, no.

Mr. KENDALL. There were only two fisheries along that piece you speak of, one was about a mile or a mile and a half from where we were the other day and if there had been three there I would have known.

Mr. STEENERSON. According to your view, this point is just the same now as it was when you first saw it.

Mr. KENDALL. Not just the same, but similar.

Mr. STEENERSON. It was a series of islands then?

Mr. KENDALL. Well, there was about five or six islands; they looked alike at a distance.

Mr. STEENERSON. Have you ever seen the United States Government survey of that point made five or six years ago?

Mr. KENDALL. I may have, but I do not recollect it.

Mr. STEENERSON. It describes this point as a continuous point of land.

Mr. KENDALL. It may have been continuous at that time. It is about six or seven years ago that I towed you through from the end of Four Mile Bay, which would be 4 miles——

Mr. STEENERSON. That must have been extraordinarily high water?

Mr. KENDALL. I could not say, but at that time there was a channel through.

Mr. STEENERSON. At the very head of Four Mile Bay?

Mr. KENDALL. Yes; and these channels vary up in that country; and there might be a channel there to-day, but not last week.

Mr. STEENERSON. According to the testimony of all the people that have lived there, as far as I have heard, this was, the years I was there, a continuous channel; I rowed across it in 1898, 1899, 1900, 1901, 1902, 1903, and 1904, when it was a continuous bit of land.

Mr. KENDALL. Yes; the water was pretty low.

Mr. WYVELL. You said you rowed across it?

Mr. STEENERSON. No; I rowed alongside of it, both on the inside and outside of it. I did not mean to say across. I had Dr. Winchell, the geologist, with me one year, and I ran on both sides, and it certainly was dry land at that time.

Mr. KENDALL. It may have been I can not say, but the times I spoke of we went there with a steamboat.

Mr. STEENERSON. At the time you spoke of, it was under water, how many trips did you usually make up Rainy River in these years?

Mr. KENDALL. There was no usually; just whenever we had work. There was seasons we never went to Rainy River at all, probably.

Mr. STEENERSON. What does it cost you to tow on this lake?

Mr. KENDALL. Where from?

Mr. STEENERSON. From the source of supply down to the mills?

Mr. KENDALL. It depends upon the different conditions and distances. It costs more to tow from Rainy River than it would from Whitefish Bay.

Mr. STEENERSON. How much from Rainy River per 1,000 feet?

Mr. KENDALL. I think we used to figure about 80 cents.

Mr. STEENERSON. And how much from Whitefish?

Mr. KENDALL. About 60; there would be that difference in the distance.

Mr. STEENERSON. And these other places where they usually got logs about the same as Whitefish?

Mr. KENDALL. I never knew any contracts of that kind.

Mr. STEENERSON. By the thousand?

Mr. KENDALL. Except up the river.

Mr. STEENERSON. From those places they had contracts?

Mr. KENDALL. I have towed by the thousand.

Mr. STEENERSON. Eighty cents from Rainy River and 60 cents from Whitefish?

Mr. KENDALL. Yes; I think I have brought a tow from Whitefish for 50.

Mr. STEENERSON. That is when it was high water?

Mr. KENDALL. Yes.

Mr. TAWNEY. Are there any mines operated now in the vicinity of the Lake of the Woods?

Mr. KENDALL. There are.

Mr. TAWNEY. How many?

Mr. KENDALL. Just now there are probably three working.

Mr. TAWNEY. Do you know what the output of those three mines is?

Mr. KENDALL. I do not know anything about the output of those at present.

Mr. TAWNEY. What kind of mines are they? Gold or silver?

Mr. KENDALL. Gold.

Mr. TAWNEY. From whom could the commission obtain information as to the product of those three mines?

Mr. KENDALL. A man named Vernon who was operating a mine in Hell Diver Bay.

Mr. TAWNEY. What is his post office?

Mr. KENDALL. Kenora, I think, will catch him.

Mr. TAWNEY. What is his first name?

Mr. KENDALL. George H.

Mr. TAWNEY. You can not speak of your own knowledge as to the output?

Mr. KENDALL. Well, he just commenced. He brought down a brick about a month ago.

Mr. TAWNEY. His mine is a new one?

Mr. KENDALL. Yes; just starting to mill within a month or six weeks. He brought down a little brick. He had a 10-stamp mill, and he told me there was \$500 or \$600 in the brick.

Mr. MIGNAULT. Does he operate through a company or personally?

Mr. KENDALL. I think there is a company behind him.

Mr. MIGNAULT. But you do not know the company?

Mr. KENDALL. I did not inquire. I did not know any name except George H. Vernon.

Mr. TAWNEY. What is the other mine?

Mr. KENDALL. There is another mine on an island, and that is just opening, just about starting out—perhaps to-day. They left here yesterday. I think a nonproducing mine. They have a lot of ore in sight, and did a lot of work on it for a number of years, but it never has produced.

Mr. TAWNEY. Where is the third mine?

Mr. KENDALL. Out at Crow Lake, belonging to a man named Oscar Cronland.

Mr. TAWNEY. Does he live in Kenora?

Mr. KENDALL. Yes.

Mr. TAWNEY. Has that been in operation?

Mr. KENDALL. I think he worked there last winter, and I think he is just starting in there. But if you want information as to mining, John F. Caldwell, of Winnipeg, will give you some information.

Mr. MAGRATH. He opened the Sultana?

Mr. KENDALL. Yes; and ran it; and I guess runs it to-day, and that produced a large amount.

Mr. POWELL. When you speak about the height of water in former years are you speaking from just a general recollection, or are you speaking of the height of water with reference to natural beaches?

Mr. KENDALL. I do not know that I catch you exactly.

Mr. POWELL. When you speak of the height of water in former times have you in mind any natural beaches with reference to which the water rose?

Mr. KENDALL. Oh, yes.

Mr. POWELL. Or are you speaking from general recollection?

Mr. KENDALL. Oh, general recollection, I guess. I have not kept a record of it, and I could not give you dates, but I recollect times now occasionally that I could give you dates; for instance, in 1900 I had occasion to go to Warroad and see a man who used to kind of hold me in demand when he wanted something done quickly, the Hon. Bob, as we call him, Mr. Rogers. He wired me one day from Warroad to meet him there at 4 o'clock in the afternoon to bring him in, and we started to go there and got down between Garden Island and Driftwood Point and struck a wind on and could not cross the bar, and we had to hold up till the wind went down, and we crossed and got within about 2 miles of Warroad and struck 7 feet of water and dropped the anchor and made all the noise we could; and it came on dark, and we flashed the searchlight onto the town, and finally the Hon. Bob came out and got aboard, and the wind came up, and we got up to the east side of Garden Island, and we could not cross the bar between Driftwood Point and Garden Island; and we were out all night, and I recollect the Hon. Bob was slightly seasick.

Mr. POWELL. Do you recollect any particular marks on the shores or reefs with respect to which you have a recollection?

Mr. KENDALL. There are so many of those that we look for as the water goes down that I could not particularize them.

Mr. POWELL. Have you in mind any particular point up the shore that the water reached?

Mr. KENDALL. Oh, yes; Davys Rock up there in the channel, it has just begun to stick out this summer; we like to see that covered, and the buoy shows us where that is, and we know the marks well enough to get clear; but that is coming out.

Mr. POWELL. In times gone by that was covered?

Mr. KENDALL. Yes, at times; and at times it is sticking away out.

Mr. MIGNAULT. Have you ever seen Davys Rock covered with water?

Mr. KENDALL. Oh, yes.

Mr. MIGNAULT. Often?

Mr. KENDALL. Well, I could not say how many times, but I have seen it covered.

Mr. MIGNAULT. Could you specify any particular time?

Mr. KENDALL. I think it was covered this spring and at one time, probably along in July.

Mr. POWELL. But in old times?

Mr. KENDALL. In old times it used to be covered occasionally, of course.

Mr. POWELL. That was before the dam was put in?

Mr. KENDALL. Yes.

Mr. STEENERSON. And in times of low water in the old stages how high out of the water would that rock be?

Mr. KENDALL. It would be quite a monument. It would be probably sticking out 7 or 8 feet; I should say fully 8 feet, probably more.

Mr. LAIRD. What month was it you made this trip to Warroad? Do you remember the month?

Mr. KENDALL. It would be probably in September or October.

TESTIMONY OF MR. GEORGE A. GRAHAM, PRESIDENT AND MANAGER OF THE RAINY RIVER NAVIGATION CO.

(George A. Graham, being first duly sworn, testified as follows:)

Mr. McLENNAN. You are president and manager of the Rainy River Navigation Co.?

Mr. GRAHAM. Yes.

Mr. McLENNAN. Will you give the commission your views as to what bearing the levels of the Lake of the Woods have on navigation?

Mr. TAWNEY. Could you not divide your question, limiting it first to the conditions prior to 1887, prior to the construction of the dam?

Mr. McLENNAN. I think Mr. Graham is not familiar with it before that time.

Mr. TAWNEY. You have not shown what familiarity he has had with the Lake of the Woods.

Mr. McLENNAN. Mr. Graham, have you any knowledge of water conditions on the Lake of the Woods prior to 1887?

Mr. GRAHAM. No. I have been connected with steamboating on the Lake of the Woods for about 17 years, maybe a little more than that.

Mr. McLENNAN. What steamers has your company at the present time.

Mr. GRAHAM. The *Kenora* and the *Aguinde*.

Mr. McLENNAN. Can you give a description of the vessels; that is, the draft of them?

Mr. GRAHAM. The *Kenora* is a steel, composite twin-screw vessel, passenger and freight.

Mr. McLENNAN. Perhaps you remember what she cost?

Mr. GRAHAM. Something over \$40,000.

Mr. McLENNAN. And the steamer *Aguinde*?

Mr. GRAHAM. The steamer *Aguinde* is a wooden stern-wheel Mississippi River traffic boat.

Mr. McLENNAN. Constructed to ply on the Rainy River?

Mr. GRAHAM. Yes.

Mr. McLENNAN. She was constructed for operation on the river alone?

Mr. GRAHAM. She was constructed really as an auxiliary to help out in times of low water.

Mr. McLENNAN. She is not a suitable boat, as I understand it, for navigating the lake?

Mr. GRAHAM. No.

Mr. POWELL. What is her value?

Mr. GRAHAM. As near as I can remember, she cost about \$18,000.

Mr. POWELL. How old is she?

Mr. GRAHAM. Fifteen years.

Mr. POWELL. Are you troubled with worms on the lake here at all?

Mr. GRAHAM. No; we are not troubled with any of those barnacles about here.

Mr. POWELL. Will you give us your views as regards the lake levels best suited to navigation?

Mr. GRAHAM. It has become very apparent since 1911, when we had extremely low water, that the Lake of the Woods is the key to the Rainy River; at least that is my idea of it; that if the lake is not kept at a proper level the whole length of the river becomes dangerous and unnavigable. I think that the old mark you see on the rock is about where the water should be. If it were kept at that mark, it would be good for everybody, I think, who wants to use it for navigation purposes.

Mr. POWELL. Do you refer to the Kennedy high-water mark?

Mr. GRAHAM. It is 1,062.2, or something of that sort. I have heard it referred to as the Kennedy mark, but it was put there a great many years ago.

Mr. POWELL. Have you anything to tell the commission with regard to the prospects of traffic on the Lake of the Woods and Rainy River?

Mr. GRAHAM. It would seem that with the water here surrounded by railways from the south and east and west, so that it is possible to get people to these waters now, that the traffic would develop. I do not see why it does not develop faster than it has. It has very good railway connections with St. Paul, Minneapolis, Duluth, and all through northern Dakota and Manitoba.

Mr. KEEFER. Mr. Graham, you have owned boats on the lower lakes, or have been interested in them?

Mr. GRAHAM. Yes; I have been interested in boats there.

Mr. KEEFER. You know the Thousand Islands district and the Georgian Bay district?

Mr. Graham. Yes, sir; I have been there.

Mr. KEEFER. How does the Lake of the Woods island district compare with either of those celebrated districts?

Mr. GRAHAM. To my mind it is better than either of them; that is, more picturesque.

Mr. KEEFER. Heretofore it has been due to inaccessibility that they have not been more used?

Mr. GRAHAM. Yes; inaccessibility and want of population within a reasonable distance, but that is being repaired by the growth of the cities.

Mr. KEEFER. Roughly speaking, have you any idea of the number of islands in the Lake of the Woods?

Mr. GRAHAM. It is claimed that there are 10,000, and I would not doubt it at all. I do not think anybody knows how many islands there are.

Mr. KEEFER. Have you any idea how many have up to this time been taken up?

Mr. GRAHAM. I should say a very small percentage of them.

Mr. KEEFER. You could not say what that percentage would be?

Mr. GRAHAM. No.

Mr. TAWNEY. Do you know how many islands are occupied by dwellings?

Mr. GRAHAM. No; I do not.

Mr. MIGNAULT. Could you say about how many are occupied?

Mr. GRAHAM. No; I could not even give you a reasonable guess.

Mr. KEEFER. Some of the homes that have been built there, I understand, are quite expensively built.

Mr. GRAHAM. I understand they are quite little mansions.

Mr. KEEFER. Their construction running into thousands of dollars?

Mr. GRAHAM. Yes.

Mr. KEEFER. It is needless to ask if navigation would be essential to the development of that district as a resort like the Thousand Islands.

Mr. GRAHAM. Of course, that is the reason they are there, owing to the water.

Mr. TAWNEY. Mr. Graham, I have been informed by Dominion officials that there are in the neighborhood of 9,000 meandered islands in the lake; that is, that the Government has surveyed as many as 9,000. Do you know whether that is correct or not?

Mr. GRAHAM. I knew it surveyed for a couple of years, but I did not know how many they had gotten. There have been parties out here two seasons, if not more.

Mr. McLENNAN. They never completed the survey. They went to what they thought was far enough and stopped.

Mr. MIGNAULT. Most of the islands are known under a number rather than under a name, are they not?

Mr. GRAHAM. I have understood that that was one reason they surveyed, to get them under a number system.

Mr. KEEFER. These tourists mentioned by Mr. Scovil have their own docks for their launches, etc., as well as their boathouses?

Mr. GRAHAM. Yes; they all seem to have little boathouses.

Mr. KEEFER. The levels of those docks have been given so that the commission and the engineers have that information before them, but, as a man accustomed to building docks, what would you say as regards the cost of raising the docks instead of lowering them?

Mr. GRAHAM. I can not claim to be a dock builder. I do not know about that.

Mr. KEEFER. You are sufficient of a boatman to know that if you lower the water to 1,057, as Mr. Marschalk at Warroad advocated, these docks would have to be lowered. He pointed out that that should be done. Now, which is cheaper, to lower the dock or simply raise it, taking into consideration the lowness of the water if you have to build your dock farther out?

Mr. GRAHAM. I would say that if a camper had to have his water lowered to 1,057 he would be very uncomfortable, no matter what he did, and would probably have to rebuild his works.

Mr. KEEFER. He would have to build out to deep water again?

Mr. GRAHAM. Yes.

Mr. KEEFER. It is not correct to assume that it is a simple matter to lower a dock?

Mr. GRAHAM. I would not think so; no.

Mr. LAIRD. You spoke about the traffic not developing faster. Can you assign any reason why the tourist traffic, in which you are interested, has not developed more satisfactorily from your point of view?

Mr. GRAHAM. I think if I knew the reason I would try to correct it. I do not know why, but it did not come as fast as we expected.

Mr. LAIRD. You say you can not assign any reason?

Mr. GRAHAM. I will tell you what some of the passengers say. They say we do not advertise enough. We are spending all the money we can afford and still it does not seem to cover the territory to suit them.

Mr. LAIRD. The fact that you do not advertise can not affect the passengers that count. The passengers whom you do have and who make the trip, what do they tell you as to the causes why more do not come?

Mr. GRAHAM. They express surprise that the boats are not filled all the time. They are so well pleased with the trip that they are surprised.

Mr. LAIRD. I understand that for a part of this year your boat ran all the way to Fort Frances?

Mr. GRAHAM. Yes.

Mr. LAIRD. Do you know for what months and for what period? Can you give the commission the dates?

Mr. GRAHAM. I can not, but I think Mr. MacKenzie can.

Mr. LAIRD. When you can not run to Fort Frances what do you do with your passengers?

Mr. GRAHAM. Transfer them to the *Aguinde*.

Mr. LAIRD. Where does that transfer take place?

Mr. GRAHAM. At the most suitable point along the river, according to the hours and the day.

Mr. LAIRD. You just tie one boat up beside the other and transfer?

Mr. GRAHAM. Yes.

Mr. LAIRD. Has that transfer any effect on the development of traffic?

Mr. GRAHAM. I think it has a very bad effect.

Mr. LAIRD. What expressions do the passengers give as to having to transfer from one boat to the other?

Mr. GRAHAM. They are usually not very well satisfied.

Mr. LAIRD. If that transfer were not required the passengers would be better satisfied?

Mr. GRAHAM. Yes; very much better.

Mr. TAWNEY. Has the *Kenora* ever made trips through from here to Fort Frances?

Mr. GRAHAM. Yes; she went through this year. She used to go through right along in the natural high water. In the natural high water we go right into Fort Frances.

Mr. TAWNEY. How late this season did the *Kenora* run up to Fort Frances?

Mr. GRAHAM. The figures are here and you can get them in a few minutes.

Mr. TAWNEY. You do not know when she ceased to make the trip through from here to Fort Frances?

Mr. GRAHAM. Some time in August, I think it was.

Mr. MAGRATH. What was the nature of the business that induced you to put \$40,000 into the *Kenora*? What did you think you saw?

Mr. GRAHAM. That was a long time ago. I do not know that I could explain why, but we stumbled into it in some way and built a good boat, owing to our ideas that the country was going to develop. There was a good deal of good farming land on Rainy River and a good deal of mining going on at the time. The railway was in prospect, but of course it was not started.

Mr. McLENNAN. Mr. Graham, I understand that there have been seasons and portions of seasons where by reason of the water conditions you have been unable to operate your boats.

Mr. GRAHAM. Yes.

Mr. McLENNAN. And that the operation of your boats has almost continuously been more or less uncertain until the season would actually arrive and you would ascertain the condition of the water. Is that the case?

Mr. GRAHAM. Very largely.

Mr. McLENNAN. Your lack of advertising has been to some extent the result of that condition of things?

Mr. GRAHAM. Yes; it certainly had a great bearing on it.

Mr. McLENNAN. So you could not tell until the season arrived as to whether you would be able to operate or not?

Mr. GRAHAM. A good deal of uncertainty was always there.

Mr. McLENNAN. So that has always enshrouded your navigating this lake and the Rainy River?

Mr. GRAHAM. Yes; it has always been a menace. We did not know what to do.

Mr. TAWNEY. What stage of water do you have to have in the Rainy River to operate the *Kenora* on that river?

Mr. GRAHAM. Somewhere around 465, they call it at International Falls. That is the depth below the Falls.

Mr. TAWNEY. That includes operating here over the Manitou and Long Soo Rapids, 465?

Mr. GRAHAM. Yes; somewhere in that neighborhood.

MR. WHITE. Mr. Graham, when you are using the *Kenora* on Rainy River, there comes a time, I assume, when your men who are experienced on that boat say, "We had better use the *Aguinda* to-day;" and there are other times when they feel assurance that they can go right up with the *Kenora*. It would be of assistance to the consulting engineers if you could furnish the commission a statement on which you would enumerate definite dates upon which you knew that the *Kenora* could not go up the Rainy River. I will explain why I am making these comments. We have, as a result of our investigation, knowledge of the amount of water that was coming down the Rainy River every day in the year, and, if we knew the particular days when you found navigation difficult with the *Kenora*, or even found navigation difficult with the *Aguinda*, then by referring to our tables we would know the amount of water which would be required to come down the Rainy River in order to give you satisfactory navigation. Do you think you could give us that information by referring to your back logs?

MR. GRAHAM. It is possible. I understand what you want. You want us to give you a date that the water was down, and you will check it with the flow of the river.

MR. WHITE. Yes; and then we would know what flow would have to come down in order to get navigation. Could you furnish that information?

MR. GRAHAM. We will attempt to do that. It might take a little time.

MR. KEEFER. These people that have occupied these islands and built these homes, and docks, and boathouses, have they done so since the conditions of the waters are as they are now, or prior to the building of the dam?

MR. GRAHAM. I do not know when they started to have their cottages here. I do not live here; I just come in once in a while. I never lived here.

MR. KEEFER. Do you know of some of the more expensive ones?

MR. GRAHAM. Yes; I have had them pointed out to me as belonging to Mr. So-and-so, and costing \$20,000, or something like that.

MR. KEEFER. You know when the dam was put in, do you not?

MR. GRAHAM. Yes.

MR. KEEFER. Have these houses been built since that time?

MR. GRAHAM. I think a great many of them must have been built since.

MR. KEEFER. So, under the present conditions of the level and as it has been for some time back, these houses and improvements have been made.

MR. GRAHAM. I presume a greater number of them; I would not say all. I do not know how far it goes back.

MR. STEENERSON. Mr. Graham, I presume the development of the traffic on the American side is important to navigation here, as well as over there. Tourists go on both sides of the line?

MR. GRAHAM. Yes; we hope so.

MR. STEENERSON. You used to carry passengers over to the American side with the *Kenora*?

MR. GRAHAM. Yes.

MR. STEENERSON. A year ago you made the trip to Warroad?

MR. GRAHAM. Yes.

Mr. STEENERSON. But not this year?

Mr. GRAHAM. Not this year.

Mr. STEENERSON. Of course, the increase in traffic over there would help the tourist business up here?

Mr. GRAHAM. Yes; if there was any.

Mr. STEENERSON. I am assuming in my question that if there were an increase in the tourist business on the American side it would also benefit the business here?

Mr. GRAHAM. Yes.

Mr. STEENERSON. Now, you spoke of the business of this particular boat, the *Kenora*. Is there anything else but tourist traffic and freight?

Mr. GRAHAM. It is the shortest way between the two districts here.

Mr. STEENERSON. What other inducement is there to run that boat, other than the tourist traffic?

Mr. GRAHAM. I presume if you take the tourist traffic out it would make it pretty hard.

Mr. STEENERSON. Well, what else is there?

Mr. GRAHAM. Just the ordinary travel. We get something once in a while.

Mr. STEENERSON. Is that all?

Mr. GRAHAM. That is all.

Mr. STEENERSON. Is there anything else you carried?

Mr. GRAHAM. We carried last year fish. We carry some freight.

Mr. STEENERSON. Well, is there anything else besides freight and passengers?

Mr. TAWNEY. You carry the mails, do you not?

Mr. GRAHAM. Yes; we have a subsidy.

Mr. STEENERSON. You have the mail contract?

Mr. GRAHAM. It is not exactly that way. We have what is known as a subsidy.

Mr. STEENERSON. You are a subsidized mail steamer?

Mr. GRAHAM. Any vessel that takes a subsidy from the Dominion Government has to carry the mails for nothing.

Mr. STEENERSON. The subsidy pays for carrying the mail?

Mr. GRAHAM. It is not a mail contract in the sense of a mail contract. It is subsidy that you have to work for.

Mr. MIGNAULT. You are not paid for carrying the mails.

Mr. GRAHAM. No; we get the subsidy for running the boat.

Mr. STEENERSON. You get the same subsidy whether you carry 1 pound or 10 pounds of mail?

Mr. GRAHAM. Exactly.

Mr. STEENERSON. But you have to carry the mail whatever it is?

Mr. GRAHAM. Yes.

Mr. STEENERSON. What is the subsidy?

Mr. GRAHAM. \$8,000 per annum.

Mr. STEENERSON. Does it differ in different years?

Mr. GRAHAM. We had \$10,000 once and now it is \$8,000.

Mr. MIGNAULT. It is voted every year?

Mr. GRAHAM. Yes; it is voted every year.

Mr. STEENERSON. And if it were not for the subsidy it would not pay to run?

Mr. GRAHAM. It does not pay anyway.

Mr. STEENERSON. At the hearing at Warroad it was claimed, with reference to the tourist traffic, that since the lake had been high the sand beaches had been flooded and that tourists refused to come and visit the lake on that account—because there were no sand beaches. Do you know anything about that?

Mr. GRAHAM. I do not think there can be anything in that. I never heard of it before.

Mr. STEENERSON. You do not think there can be anything in it?

Mr. GRAHAM. I do not think so. I never heard of it.

Mr. STEENERSON. They swear to it down there. They say that that is the reason why the tourists did not come there, because there was no place for them. There was just a lake.

Mr. GRAHAM. Who says there are no sand beaches?

Mr. STEENERSON. Several of the witnesses said that.

Mr. GRAHAM. There are lots of them around here.

Mr. STEENERSON. Well, they are all flooded down there.

Mr. GRAHAM. I do not know anything about what happened there.

Mr. STEENERSON. You think a sand beach would be an attraction to tourists and campers?

Mr. GRAHAM. It might be to campers, but I do not think it amounts to anything to tourists.

Mr. STEENERSON. Well, to summer resorters?

Mr. GRAHAM. That is a camper, is it not?

Mr. STEENERSON. Yes.

Mr. GRAHAM. I suppose a camper likes to have a sand beach; yes. I never was a camper. I do not know anything about it.

Mr. STEENERSON. Well, you have studied this question of the tourist traffic.

Mr. GRAHAM. But not from the angle of the camper.

Mr. STEENERSON. You testified as to the reason for the tourist and summer-resort people visiting the lake, and I supposed that was a proper question.

Mr. GRAHAM. I just want to say that I do not know anything about the campers.

Mr. STEENERSON. You do not know anything about the inducement for campers and summer visitors?

Mr. GRAHAM. I imagine that sand beaches would be an inducement.

Mr. STEENERSON. There was testimony to the effect that before the lake level was raised there were sand beaches from the Canadian boundary north of Warroad clear around to Rainy River, and that they are all flooded now. That was given as one of the reasons why they did not get any tourists or summer visitors. You have no doubt about the truth of those statements, have you, if they were made?

Mr. GRAHAM. That there are sand beaches there?

Mr. STEENERSON. Yes.

Mr. GRAHAM. I am not going to contradict anything they say. I have no knowledge of it. I always thought there were lots of sand beaches left there.

Mr. STEENERSON. There may be on the Canadian shore.

Mr. GRAHAM. You were not with us on Sunday last when we came up through the Lake of the Woods or you would have seen a sand beach at Curry's Point.

Mr. POWELL. Gentlemen, we want to get through to-day as soon as possible.

Mr. GRAHAM. I am willing to stop now.

Mr. STEENERSON. If the commission thinks it is wasting time, I will stop now.

Mr. MAGRATH. Go on, Mr. Steenerson.

Mr. STEENERSON. That is all.

TESTIMONY OF ALEXANDER MACKENZIE—Recalled.

(Alexander MacKenzie, who had been previously sworn, resumed the stand and testified as follows:)

Mr. McLENNAN. Mr. MacKenzie, you are the assistant manager and general passenger agent of the Rainy River Navigation Co.?

Mr. MACKENZIE. Yes, sir.

Mr. McLENNAN. The question of the successful development of the tourist traffic here was referred to. Will you tell the commission what you know regarding the difficulties in that connection?

Mr. MACKENZIE. A great deal of it has been caused by low water in the Rainy River, according to my opinion. If we could run the *Kenora* through successfully without having to transfer at certain seasons of the year from the *Kenora* to the *Aguinde*, we could go ahead and advertise that fact in advance. Another thing, we could advertise our time-tables ahead, but when we are in this state of uncertainty that at any time we may have to transfer to the *Aguinde* and change our time cards, it causes a great deal of confusion, and we never can tell ahead how the water is going to be.

Mr. McLENNAN. In advertising your business what have you learned in the way of the necessity for giving out information at any particular time in advance?

Mr. MACKENZIE. I find that we should advertise through the winter, because most people plan where they are going to go several months ahead, and unless we state our case to them in the winter, while they are planning where they are going to go, we do not get them.

Mr. McLENNAN. What I understand you to say is that you are unable to issue your time-tables, or know just what you can do, until the season arrives?

Mr. MACKENZIE. Exactly, until the season arrives.

Mr. McLENNAN. Is there anything you wish to say as to the water levels, as to how they affect you indirectly?

Mr. MACKENZIE. This year the *Kenora* ran through to Fort Frances from the 13th of June until the 3d of August. That was about the highest period of water in the Lake of the Woods. When the lake fell here it affected the level at the Soo Rapids. It affected it so much that we could not run the boat through after the 3d of August. At least, the water fell at the same time at the Soo Rapids.

Mr. TAWNEY. Do you know what stage of water there was in the Rainy River during the time you were navigating that river with the *Kenora*?

Mr. MACKENZIE. I understand the stage here was something over 1,061.

Mr. MIGNAULT. What was it in the Rainy River?

Mr. MACKENZIE. I do not know just what the record was. I have not the record except for Fort Frances. The record at Fort Frances was about 465.6 and up to 466.

Mr. MIGNAULT. What would that mean at the Soo Rapids?

Mr. MACKENZIE. From 465 to 466 at Fort Frances means good water at the Soo.

Mr. POWELL. Has an interruption of navigation on the Rainy River of your company's boats been due, in a measure, to the shutting off of the water at International Falls?

Mr. MACKENZIE. Yes.

Mr. POWELL. That has led to serious interruptions in times gone by?

Mr. MACKENZIE. Yes.

Mr. POWELL. Does that source of interruption exist still?

Mr. MACKENZIE. Yes; more or less.

Mr. POWELL. Another cause of interruption was the infringement by private parties on public rights and navigation by putting up piers and booms. Has that difficulty been removed?

Mr. MACKENZIE. That has been practically removed.

Mr. POWELL. So at the present time you do not experience difficulty from that?

Mr. MACKENZIE. I would not like to say that. Our difficulty this summer was low water.

Mr. LAIRD. In 1914 did the *Kenora* come to Fort Frances at all?

Mr. MACKENZIE. No.

Mr. LAIRD. In 1913 did she come to Fort Frances at all?

Mr. MACKENZIE. No; the *Kenora* has not been to Fort Frances for some time up until this summer.

Mr. LAIRD. How many passengers can she accommodate?

Mr. MACKENZIE. She is licensed to carry 250 passengers.

Mr. LAIRD. What sleeping accommodations has she?

Mr. MACKENZIE. Accommodations for about 75.

Mr. LAIRD. Then, from the point of view of the cost of operation, what effect would the transfer from one boat to the other have?

Mr. MACKENZIE. It considerably increases the cost of operation. It nearly doubles it.

Mr. LAIRD. You would have to have two boats and two crews, I suppose?

Mr. MACKENZIE. Yes; in the place of one.

Mr. LAIRD. From the point of view of the traveling public, what have you to say about the transfer?

Mr. MACKENZIE. They are not satisfied when they are transferred from a better boat to an inferior boat. Besides, there is the inconvenience of putting them from one boat to the other.

Mr. LAIRD. Do you know anything about the conditions along the shore of the American side of Rainy River with reference to the beaches?

Mr. MACKENZIE. I know that there is a good sand beach at Currys Point or Oak Point, because I have been swimming in there.

Mr. LAIRD. Do you know how far it extends westerly?

Mr. MACKENZIE. There must be over a mile, perhaps 2 miles, and it extends out. I walked out on it.

Mr. LAIRD. That is there at the present time?

Mr. MACKENZIE. Yes.

Mr. LAIRD. Can you fix any month this year or last year?

Mr. MACKENZIE. It was there all summer.

Mr. LAIRD. Even during high waters, when you were navigating Rainy River?

Mr. MACKENZIE. Yes.

Mr. TAWNEY. Mr. MacKenzie, under the conditions of the decision of the commission in approving the application of the Watrous Island Boom Co. to construct and maintain that boom in the Rainy River, among others, was the dredging of that sand bar near Watrous Island? Do you know whether that dredging has been completed?

Mr. MACKENZIE. It has not been done at all.

Mr. POWELL. And that is an obstruction to navigation?

Mr. MACKENZIE. That is an obstruction to navigation.

Mr. TAWNEY. Then the orders of the commission have not been complied with.

Mr. MACKENZIE. They have not, sir.

Mr. TAWNEY. Do you know whether or not any steps have been taken by the Dominion or Provincial Government to have the company comply with that condition of the order of the commission?

Mr. MACKENZIE. I have not heard of anything.

Mr. STEENERSON. How many trips did the *Kenora* make up Rainy River in 1915?

Mr. MACKENZIE. Through to Fort Frances?

Mr. STEENERSON. Yes.

Mr. MACKENZIE. Twenty-one trips.

Mr. STEENERSON. How many trips did she make to Fort Frances in 1914?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1913?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1912?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1911?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1910?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1909?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1908?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1907?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1906?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1905?

Mr. MACKENZIE. Not any.

Mr. STEENERSON. How many in 1904?

Mr. MACKENZIE. Well, I will have to look up the records. She made quite a number of trips in 1904.

Mr. STEENERSON. From 1904 to 1915 she never went to Fort Frances?

Mr. MACKENZIE. No, sir.

Mr. STEENERSON. You will look up the records, will you, to ascertain how many trips she made in 1904?

Mr. MACKENZIE. Yes, sir.

Mr. STEENERSON. How many trips did she make in 1903?

Mr. MACKENZIE. I would have to look up the records.

Mr. STEENERSON. Did she make any trips in 1903?

Mr. MACKENZIE. I think she did, from my present recollection.

Mr. STEENERSON. Did she make any in 1902?

Mr. MACKENZIE. Well, I would have to look up the records.

Mr. STEENERSON. I was at Currys Point then, and I would be very much surprised if she made any trips. You could not say whether she made any trips in 1902 or 1901 or 1899?

Mr. MACKENZIE. I think she did. In 1900 she did not come through until fall. It was a year of very low water. In 1901 she went through. In 1902, I am very positive that she went through.

Mr. STEENERSON. How far back does your knowledge go?

Mr. MACKENZIE. It goes back 21 years.

Mr. STEENERSON. How was it when you first started? Did you go to Fort Frances then with the *Kenora*?

Mr. MACKENZIE. It was not in existence then.

Mr. STEENERSON. When did she go through, in the year when she was built?

Mr. MACKENZIE. Yes.

Mr. STEENERSON. What year was that?

Mr. MACKENZIE. In 1897.

Mr. STEENERSON. Did she make a trip in 1898?

Mr. MACKENZIE. Yes; she went through part of the year up to 1900, and she went through that year too, in the fall.

Mr. STEENERSON. But there were very few trips?

Mr. MACKENZIE. Well, it was a period of very low water in 1900.

Mr. STEENERSON. The reason she did not come through to Fort Frances at any time was on account of low water, I suppose?

Mr. MACKENZIE. Yes.

Mr. STEENERSON. If there had been high water she would have gone through?

Mr. MACKENZIE. Yes; of course, in some of those years from 1904 there was very little business. It was shortly after the railroad went through and we were not operating very extensively.

Mr. STEENERSON. You ran her across the lake?

Mr. MACKENZIE. Certain years we did not.

Mr. STEENERSON. In what years did you not?

Mr. MACKENZIE. I can not say offhand what years, but it was partly on account of no business at all that we did not run it.

Mr. STEENERSON. So the railroad affected the lake traffic?

Mr. MACKENZIE. Yes.

Mr. STEENERSON. It did not pay to run at all?

Mr. MACKENZIE. No; not after the railroad went through.

Mr. STEENERSON. How many years was that?

Mr. MACKENZIE. There were a few years there when we did not make any money.

Mr. STEENERSON. You did not run but you laid up?

Mr. MACKENZIE. I could not say without looking up the records.

Mr. STEENERSON. What is your recollection about it? How many years did you lay up because it did not pay to run?

Mr. MACKENZIE. She was laid up two years and probably three.

Mr. STEENERSON. What years were they?

Mr. MACKENZIE. She was laid up in 1910. Another year we ran a smaller boat in her place.

Mr. STEENERSON. You operated in 1911 as far as the town of Rainy River?

Mr. MACKENZIE. As far as Boucherville at the foot of the rapids. We operated through in 1911 with two boats.

Mr. STEENERSON. You ran the *Kenora* clear to Fort Frances?

Mr. MACKENZIE. We transferred from one boat to the other.

Mr. STEENERSON. I am speaking about the *Kenora* running to Fort Frances.

Mr. MACKENZIE. I am correcting the statement just made.

Mr. STEENERSON. I asked you once before and you said the *Kenora* did not run to Fort Frances in 1911.

Mr. MACKENZIE. I made the statement that we operated only to Boucherville in 1911, and I wanted to correct that statement and say that we operated through by transferring.

Mr. STEENERSON. But you do not want it corrected by saying that you operated the *Kenora*? You could not run in 1911 because the water was too low?

Mr. MACKENZIE. Exactly.

Mr. STEENERSON. It was not because it did not pay to operate, but you could not operate. Is not that correct?

Mr. MACKENZIE. In 1911?

Mr. STEENERSON. Yes. Is that statement correct or not?

Mr. MACKENZIE. We could not run the boat through in 1911. There was not enough water.

Mr. TAWNEY. Mr. MacKenzie, if that bar you spoke of a moment ago in the Rainy River in the vicinity of Watrous Island were removed as required by the order of this commission, would that bar improve the navigation of the river materially?

Mr. MACKENZIE. I do not know exactly where that dredging was ordered to be done.

Mr. TAWNEY. It is right on this side of Watrous Island. It is in between the lower and the upper end of Watrous Island boom and in the vicinity of Watrous Island. There is only one there.

Mr. MACKENZIE. That is the bar. It is known locally as Hanford Bar. The removal of that bar would help navigation.

Mr. TAWNEY. Until that bar is removed, in accordance with the order of the commission, the maintenance of the boom is a visible obstruction in the Rainy River.

TESTIMONY OF DONALD H. CURRIE, OF KENORA, ONTARIO.

(Donald H. Currie, being first duly sworn, testified as follows:)

Mr. McLENNAN. You are the local manager of the Rat Portage Lumber Co.?

Mr. CURRIE. Yes.

Mr. McLENNAN. Will you tell the commission the extent of the operations carried on by your company at this place?

Mr. CURRIE. We operate a sawmill. In years past we operated a tie mill. It has not been running this year or last year. We also do logging and steamboat business in connection with the operation of that plant.

Mr. McLENNAN. Have your tie-mill operations been suspended temporarily or permanently?

Mr. CURRIE. Temporarily, we hope.

Mr. McLENNAN. No ties are being required this year I understand.

Mr. CURRIE. There is no market for ties at the present time.

Mr. McLENNAN. Will you give us the capacity of your lumber mill and your tie mill?

Mr. CURRIE. Our tie mill has a capacity of 2,500 ties per day; the sawmill 100 to 110 feet per 10 hours.

Mr. McLENNAN. Will you give the commission an estimate of what has been the turnout of your mills over the last few years?

Mr. CURRIE. This year we expect to have about 22,000,000 or 23,000,000 feet. Last year we shut down about the middle of August. Previous to that we have run every season from 14,000,000 to 18,000,000 feet.

Mr. POWELL. That is exclusive of the ties?

Mr. CURRIE. Exclusive of the ties. The ties from 100,000 to 300,000 per year.

Mr. McLENNAN. Can you give us an estimate of the capital invested in your plant here; that is, in your complete plant?

Mr. CURRIE. We are carrying it on our books at present at \$300,000. It has been considerably larger, but the head office of the company is in Winnipeg and the business is from British Columbia, Winnipeg, and Ontario, and our investment here is now \$300,000. That is what it is valued at. It has been considerably higher in years gone by, but is greatly reduced.

Mr. POWELL. What is the average price for your sawed product?

Mr. CURRIE. Do you mean the yard or the market price?

Mr. POWELL. Here at the yard.

Mr. CURRIE. Our average sales price has run from \$17.50 to \$22 per thousand for the output in various years.

Mr. POWELL. That includes merchantable stuff and refuse and everything?

Mr. CURRIE. The merchantable lumber, what has been sold; and we value our stock at about \$15 or \$16 in the yard.

Mr. POWELL. What about the ties?

Mr. CURRIE. I suppose a fair average price of the ties would be about 40 cents apiece.

Mr. MACRATH. Where do you come in competition with British Columbia?

Mr. CURRIE. Throughout the West.

Mr. MACRATH. Your operations here are largely controlled by activity in the settlement of the West, I presume?

Mr. CURRIE. Very largely; almost entirely.

Mr. McLENNAN. Mr. Currie, will you tell us what boats your company has plying on the Lake of the Woods, giving any particulars you can?

Mr. CURRIE. There is one boat we do not operate this year at all. Until this year we had the *Empress*, a boat that cost us about \$25,000, but she is valued at \$20,000 by us now; the *Kingfisher*, which is fully as strong a boat, and the *Windigo*, a smaller boat.

Mr. POWELL. Have you any alligators?

Mr. CURRIE. Yes; we have a couple of alligators.

Mr. POWELL. What is the value of them?

Mr. CURRIE. When they were new, about \$3,000 each.

Mr. McLENNAN. Can you tell us what effect the water levels have on your business with respect to the transportation part of it? I understand that your business is dependent upon navigation, the same as the others.

Mr. CURRIE. Almost entirely; in fact, entirely. On a fair stage of water, such as at present or higher, it is much easier and more economical to have the logs brought into the mill than at a lower stage of water. During the year 1911, the year of low water, our towing cost, or steamboat cost, of operating the boats was fully 25 per cent higher than any ordinary year.

Mr. McLENNAN. The increased cost, or your loss, included the loss of logs, etc.?

Mr. CURRIE. The loss of logs is largely a guess, but there was a heavy loss of logs that year, and a couple of years afterward we were picking up a number of those logs that we lost. They cost probably \$5 or \$6 a thousand extra for picking them up. In addition to that, there are logs that I guess we will never get.

Mr. POWELL. That would be about half or more than what they were worth, would it not.

Mr. CURRIE. Yes, sir; our friends up at Warroad are getting the benefit of some of them.

Mr. McLENNAN. Mr. Currie, you have heard the difficulties described by Capt. Kendall and others in connection with bringing in logs. What do you say as to that?

Mr. CURRIE. It is absolutely true. I think the same difficulty has been experienced by everybody who has been operating on the lakes.

Mr. McLENNAN. Can you give us any general information as to the value of the fleet at Kenora? You are an ex-mayor of Kenora and have been connected with the board of trade and other matters of that kind, I understand?

Mr. CURRIE. Yes.

Mr. McLENNAN. Can you give us an estimate on that?

Mr. CURRIE. Of the value of the steamboats?

Mr. McLENNAN. Yes.

Mr. CURRIE. About \$300,000 is a conservative estimate. I would say that we have been going over that matter with Mr. Phillips, the steamboat inspector. A little over \$300,000 is what we have estimated to be the present value of the boats.

Mr. McLENNAN. Can you give us an estimate of the value of the gasoline launches, and also, perhaps, the number that ply on this end of the Lake of the Woods?

Mr. CURRIE. Two years ago the board of trade made an inquiry and got from the agent of the marine department here a memorandum of the number of boats. There were about 375 then. There have been fully 75 added since, and a conservative valuation of those boats would be about \$800 apiece. That would make something over \$320,000 as an investment in gasoline boats.

Mr. POWELL. Are they inspected by the inspector?

Mr. CURRIE. No; they are not.

Mr. POWELL. Not even if they are decked over?

Mr. McLENNAN. Those that are used in a public way for passengers, I understand, are under his direction.

Mr. MIGNAULT. But the private launches are never inspected?

Mr. McLENNAN. The private launches are not inspected. Mr. Currie, can you give any information as to the draft of those boats?

Mr. CURRIE. There are some of the larger gasoline boats with a draft of 3 to 3½ feet. There are some with a draft of 4 feet. I suppose from 18 inches to 4 feet would cover the majority of gasoline boats.

Mr. McLENNAN. Can you give us an estimate of the value of the dockage on this end of the lake above the towns of Kenora and Keewatin?

Mr. CURRIE. I heard Mr. Scovil give a value yesterday of \$185,000, which I thought was very correct. I was estimating it at about \$180,000, but I dare say that he is in a better position to form an opinion of it than I am. He has made a fuller examination or inquiry.

Mr. McLENNAN. There is another tie-mill industry within the town of Kenora operated by Capt. J. W. Short. Can you give the commission an estimate of the extent of those operations and the investment?

Mr. CURRIE. I would consider it would be about \$7,500 as an investment. He has a tie mill and there is also a resaw for cutting lumber, and a lath mill. I would think that \$7,500 would be a fair estimate of his investment and his output in connection with it.

Mr. POWELL. Is it a band resaw?

Mr. CURRIE. Yes.

Mr. McLENNAN. It, like the others, is also dependent upon navigation?

Mr. CURRIE. Just the same as the other lumber interests.

Mr. McLENNAN. Have you made any estimate of the industries generally that are dependent upon navigation?

Mr. CURRIE. Virtually all the industries in this district or in the towns of Kenora and Keewatin, are dependent very largely upon navigation interests, and those interests and investments altogether would be considerably over \$3,000,000, including the Lake of the Woods Milling Co., which is only partially dependent upon that, although it affects them.

Mr. KEEFER. Mr. Currie, you have been clerk of the municipality and mayor also?

Mr. CURRIE. Yes, sir.

Mr. KEEFER. Can you give us what the total assessment of the property of the town of Kenora is?

Mr. CURRIE. In round figures, \$3,300,000. I have not got this year's figures.

Mr. KEEFER. That is without exemptions?

Mr. CURRIE. That is without exemptions.

Mr. KEEFER. Does that include Keewatin?

Mr. CURRIE. No.

Mr. KEEFER. Some of the gentlemen may not know about Keewatin.

Mr. CURRIE. Keewatin is a separate municipality, an incorporated town adjoining Kenora on the same shore here, and has conditions very similar to those here.

Mr. KEEFER. Roughly speaking, what is the assessment of Keewatin?

Mr. CURRIE. I do not know.

Mr. KEEFER. I thought Keewatin was a part of Kenora. The three places that were incorporated into that name were what?

Mr. CURRIE. They took the first two letters off the three places here, Keewatin, Norman, and Rat Portage, and that formed the name "Kenora."

Mr. MIGNAULT. Since when has Kenora been known under that name?

Mr. CURRIE. The name was changed in 1904. The first of 1905 it went into effect.

Mr. MIGNAULT. It was quite an old post under the name of Rat Portage?

Mr. CURRIE. Yes; it was an old Hudson Bay post.

Mr. KEEFER. Were you here in 1887?

Mr. CURRIE. Yes, sir; I came here in April, 1886.

Mr. KEEFER. Was there any number of campers or cottage people here in 1887, before this dam was built?

Mr. CURRIE. No; there were really none.

Mr. KEEFER. They have all come since the dam has been built?

Mr. CURRIE. There were a few in before the dam was built. I think it was 1890 that the first of them came in, but the greater majority came in since that dam was built.

Mr. KEEFER. But before the building of the Rollerway Dam there were not any here?

Mr. CURRIE. I would say there were none.

Mr. KEEFER. Can you give us any estimation of the number of people that come here in the summer months as your tourist trade?

Mr. CURRIE. That come down on the lake here, between Keewatin and the other lake?

Mr. KEEFER. Yes; all around here.

Mr. CURRIE. I would say there are fully 3,000. There are two camps here, the Y. M. C. A. and the Methodist Literary Association, which is a Winnipeg organization, and each of them take campers or parties coming in for a couple of weeks. Each one has had from 200 to 300 right along during the summer, in addition to all that come into the regular summer cottages.

Mr. MIGNAULT. Those camps are on the islands?

Mr. CURRIE. Yes.

Mr. POWELL. Are they tents?

Mr. CURRIE. No; regular buildings.

Mr. GARDNER. What is the regular population of this town?

Mr. CURRIE. About 6,500.

Mr. KEEFER. Have you ever had any estimate made of the value of the summer cottages in the district?

Mr. CURRIE. We have. It ran over a million and a quarter for the summer cottages that are on the lake here.

Mr. KEEFER. The Canadian Pacific Railway Co. runs excursions here every week end, does it not?

Mr. CURRIE. Every Friday and Saturday it brings over a very large influx for the week end.

Mr. KEEFER. How many come down on the train and go away again on Monday morning?

Mr. CURRIE. There are from 10 to 12 coaches on each of those trains and they are all filled, as a rule, every week end on Friday and Saturday.

Mr. KEEFER. It is a local train between Winnipeg and Kenora; it does not run past here?

Mr. CURRIE. Exactly. There would be 600 or 700 on each day; probably a thousand a week.

Mr. KEEFER. Is that class of business increasing or not?

Mr. CURRIE. It is increasing, excepting this year, I think, it has not been up to the normal, but there were other causes for that.

Mr. KEEFER. You were here in the days of the mining?

Mr. CURRIE. Yes, sir.

Mr. KEEFER. There was some talk about a gold brick once being brought in. What was the real state of affairs as regards the mining and the bringing in of gold bricks in those days, genuine gold bricks?

Mr. CURRIE. It was a regular occurrence—a weekly occurrence—from three different mines. I think every week they would bring in a number of bricks. That virtually continued for over three years.

Mr. KEEFER. Have you any rough idea what was the output of the Sultana mine in value?

Mr. CURRIE. I have heard it, but I could not state now what it is.

Mr. POWELL. It is a dead industry at the present time?

Mr. KEEFER. But the veins are all here untouched, and what has been done can be done again.

Mr. POWELL. Would not a fair inference be that until the industry is revived it does not pay to revive it?

Mr. KEEFER. Take the history of mining in Colorado; many of the abandoned mines have become most celebrated.

Mr. POWELL. That is true. By improved methods they can work the tailings.

Mr. KEEFER. Can you give us some idea of this mining, Mr. Currie?

Mr. CURRIE. From 1897 until 1900 or after it was a regular occurrence that gold bricks were coming in from one mine or another. They were on display at the bank. Almost every week they were coming in from some place. The bricks were valued all the way from a thousand to \$2,500 apiece.

Mr. KEEFER. Can you give me any idea as to what the Sultana produced in bullion?

Mr. CURRIE. It is only hearsay. It would be something over a million dollars of gold taken out of the Sultana.

Mr. KEEFER. But that was quite an industry in those days?

Mr. CURRIE. It was. The Sultana was a large mine; so was the Black Eagle and the Mikado.

Mr. KEEFER. There are quite a few new properties now being operated?

Mr. CURRIE. Yes.

Mr. STEENERSON. As a rule, these miners and prospectors are rather a hopeful people, are they not?

Mr. CURRIE. Yes; they are, as a rule, optimistic.

Mr. STEENERSON. They are the ones who expect a revival of the mining industry?

Mr. CURRIE. No; it is the mining men, the actual miners, the mining investors, that are looking for the revival. They have the properties.

Mr. STEENERSON. So it is not the miners and prospectors?

Mr. CURRIE. It is not the prospectors; it is the mining investors.

Mr. STEENERSON. The mining investor is now the one that is hopeful?

Mr. CURRIE. He is now the one that is moving.

Mr. STEENERSON. How many of them are moving?

Mr. CURRIE. I could not say as to that. I know there are three separate properties that are now being worked, opened up, or exploited.

Mr. STEENERSON. The Sultana is not being operated.

Mr. CURRIE. Not at present; no.

Mr. STEENERSON. Did you ever hear of a mine called the Randolph mine?

Mr. CURRIE. I think that was up on Seine River, was it not?

Mr. STEENERSON. Was it not on the Lake of the Woods?

Mr. CURRIE. No, sir.

Mr. MAGRATH. How long have you been engaged in the timber business, Mr. Currie?

Mr. CURRIE. I started in in 1872.

Mr. MAGRATH. Are you familiar with the timber districts within the Lake of the Woods drainage area?

Mr. CURRIE. Fairly; yes, sir.

Mr. MAGRATH. A good deal has been said here about the timber business and the disposal of the timber. Nothing has been said as to what action, if any, either country has taken in the matter of restoring that timber. Has anything been done that you know of?

Mr. CURRIE. There has been nothing done in this district.

Mr. MAGRATH. In fact, you are engaged in stripping the country of its timber wealth, and nothing has been done to restore it.

Mr. CURRIE. There is nothing being done to restore it.

Mr. MAGRATH. Do you regard it as feasible to restore it?

Mr. CURRIE. Yes.

Mr. MAGRATH. Do you regard it as good business to attempt to do it?

Mr. CURRIE. It would be on the part of the Province. No individual could afford to do it, but there are large areas in this district that are really fit for nothing else but production of timber, which with a little care could be reforested and would ultimately be just as valuable as they have been in the past, if not more so.

Mr. MAGRATH. You look upon it as a practicable scheme to do that?

Mr. CURRIE. I do.

Mr. MIGNAULT. In what grants of timber limits are there any restrictions placed on the cutting of timber?

Mr. CURRIE. There is a limit of 11 inches at the stump.

Mr. MAGRATH. What does that mean?

Mr. CURRIE. Practically the ground.

Mr. MIGNAULT. Are these regulations carried out?

Mr. CURRIE. Fairly. I would not say that they were carried out exactly. It scarcely pays to take out a log that is much smaller at the stump than 10 or 11 inches.

Mr. MIGNAULT. Practically there is no remedy except the natural growth that may spring up?

Mr. CURRIE. Not if left alone.

Mr. MIGNAULT. How long a time would it take for this natural growth to reproduce the forest which is destroyed?

Mr. CURRIE. I hardly know. I have never had any opportunity of seeing; but I know that timber that has been cut over here 20 years ago—and there was a great deal that was too small to cut then—has now made fairly good merchantable timber.

Mr. POWELL. Has your Government undertaken any scheme to reforest in Ontario at all?

Mr. CURRIE. It has in a couple of places along Lake Erie and along Lake Ontario, where there have been some of those sand plains.

Mr. LAIRD. Is there any person about here or in the West that could testify as to reforestation?

Mr. CURRIE. Not that I know of.

Mr. LAIRD. They are probably connected with the crown lands department in Toronto, I suppose.

Mr. CURRIE. Yes.

Mr. LAIRD. Do you know the name of the forestry expert of the Province?

Mr. CURRIE. Prof. Zavitz.

Mr. LAIRD. What limits has your company for the operation of its mills here? For how long will the supply last?

Mr. CURRIE. The available timber that we are holding at present would not run five years, but there are other districts or areas that are still open.

Mr. LAIRD. But your company at the present time has those limits, which would enable you to operate for five years.

Mr. CURRIE. I think so; yes. And there are other areas still in the hands of the Crown.

Mr. LAIRD. Do you know anything about the navigation on the river north of Kenora?

Mr. CURRIE. Yes; I have been up and down it a good many times.

Mr. LAIRD. Up and down how far?

Mr. CURRIE. I was never down quite as far as White Dog. I was down as far as Big Sandy Lake, about 10 miles below Minaki.

Mr. LAIRD. This last few years there has been considerable passenger traffic between here and Minaki?

Mr. CURRIE. Quite considerable. There is a daily passenger service all through the season well patronized.

Mr. LAIRD. That is the point where the Grand Trunk Pacific crosses the Winnipeg River, and the Grand Trunk Pacific has a very fine hotel there?

Mr. CURRIE. A very fine hotel.

Mr. LAIRD. And it was only last year that that hotel was opened?

Mr. CURRIE. Yes, sir.

Mr. KEEFER. Is there any farming opening up down there?

Mr. CURRIE. Not that I know of.

Mr. STEENERSON. How far down the Winnipeg River have you been?

Mr. CURRIE. I think about 10 miles below Minaki.

Mr. STEENERSON. You have not been clear down to Winnipeg?

Mr. CURRIE. No; I have never been down there.

Mr. STEENERSON. How many miles from the Lake of the Woods would that be?

Mr. CURRIE. I think it would be about 30 miles.

Mr. STEENERSON. Are there any tributary rivers in that district?

Mr. CURRIE. Not large ones.

Mr. STEENERSON. How many small ones are there?

Mr. CURRIE. Two or three; maybe more.

Mr. STEENERSON. You do not know their names?

Mr. CURRIE. Sturgeon Creek is one and Black River is another.

I do not know the names of others.

Mr. STEENERSON. They are wholly in Canada, I suppose?

Mr. CURRIE. Entirely; yes.

Mr. STEENERSON. You have never been down to the mouth of the English River?

Mr. CURRIE. No; I never was down that far.

Mr. STEENERSON. Have you ever seen that river?

Mr. CURRIE. No, sir.

Mr. McLENNAN. Mr. Chairman, that is all the witnesses I have.

TESTIMONY OF ADOLPH F. MEYER—Recalled.

(Mr. A. F. Meyer, having been recalled, testified as follows:)

Mr. STEENERSON. Have you introduced the map of the Winnipeg River here, showing the tributaries to it?

Mr. MEYER. We have in preparation a watershed map, about 3 feet by 4 feet, to show the Winnipeg River, with some of the immediate tributaries and a portion of the map of the watershed of the Lake of the Woods.

Mr. STEENERSON. Will it show all the tributaries?

Mr. MEYER. No; we are attempting to show only the watershed of the Lake of the Woods and the portion—

Mr. STEENERSON. Your map will not include the whole of Winnipeg River from the outlet to Lake Winnipeg.

Mr. MEYER. Yes; but not the tributaries.

Mr. STEENERSON. It will show what tributaries come in here?

Mr. MEYER. Yes.

Mr. STEENERSON. You mean you do not show the tributaries in extenso?

Mr. MEYER. No.

Mr. STEENERSON. But you show where they flow into Winnipeg River on your map? You will necessarily have to do that.

Mr. MEYER. Yes.

Mr. STEENERSON. And your plan is not to show these tributaries, only just where they flow in?

Mr. MEYER. I see no purpose in doing so on a map of the watershed of the Lake of the Woods.

Mr. STEENERSON. Excuse me, I do not want your purpose, I want the facts. Your plan is just to show the tributary where it flows into the river?

Mr. MEYER. Our map will show the Winnipeg River from Kenora to Lake Winnipeg, and incidentally will show portions of the tributaries.

Mr. STEENERSON. How large a portion of the tributaries?

Mr. MEYER. I can not say.

Mr. STEENERSON. You can not say how many miles back?

Mr. MEYER. No.

Mr. STEENERSON. Is that the map produced?

Mr. MEYER. This is the sketch map, the preliminary map. The other one will be similar; this is just merely incidental to the showing of the watershed of the Lake of the Woods.

Mr. STEENERSON. This map would indicate there were some 25 or 35 miles of distance on each side of Winnipeg River shown?

Mr. MEYER. Well, the distance varies from 1 or 2 miles to a hundred miles or more.

Mr. STEENERSON. A hundred miles or more down near the Lake of the Woods; this is the greatest distance across here [indicating]?

Mr. MEYER. Yes.

Mr. STEENERSON. What is the first tributary, as you go downstream, which comes into the Winnipeg River?

Mr. MEYER. I would have to refer to the map for that. I have not made any study of the tributaries of the Winnipeg River.

Mr. STEENERSON. If you don't know, never mind.

Mr. MEYER. I think this map shows the Black Sturgeon Lake; it may also be a river; I am not able to discuss the tributaries of the Winnipeg River in detail. The only large tributary here is the English River.

Mr. STEENERSON. About how far down to the mouth of English River?

Mr. MEYER. I should judge about 40 or 50 miles.

Mr. LAIRD. It does not appear to me the tributaries are pertinent. My learned friend objected that all the evidence relating to the Winnipeg River should be struck from the record, and to-day he is going to the tributaries. I think the Winnipeg River is pertinent, but I do not see that the tributaries come under this reference at all. I feel that we have enough to consider without considering things that are not within our jurisdiction.

Mr. STEENERSON. Without disclosing entirely the object which I do not think is policy, when the witness understands, I might say that it is for the very reason that I stated yesterday that this question is asked. This evidence is in support of the point then made, and I think it will be perfectly apparent to the commission.

Mr. MAGRATH. Go ahead.

Mr. STEENERSON. How does the English River compare in size, where it flows into the Winnipeg River, with Winnipeg River?

Mr. MEYER. The answer to that can be secured from the report of the water-power branch, but I am not competent to say. It is very substantial in size.

Mr. STEENERSON. About the same size as the Winnipeg River?

Mr. MEYER. I do not think it is that size, but it may be anywhere from a half to two-thirds or three-quarters the drainage area.

Mr. STEENERSON. I am informed by Mr. Berkman that you told him it was the same size.

Mr. MEYER. I think I said at the table that it was a large tributary, probably nearly the size of the drainage area of the Lake of the Woods. He wanted to know whether it was a small one or a large one, and I said it might be anywhere from a half to two-thirds or three-quarters or more than that.

Mr. STEENERSON. Of the volume of the Winnipeg River?

Mr. MEYER. No; the drainage area.

Mr. STEENERSON. I am after the size of the river without any scientific qualifications. How does it compare in size?

Mr. MEYER. I would say the size of the river in low water was very much less than the size of the Winnipeg River. It might be a quarter or a half, because the Winnipeg River has its flow maintained by a large system of lakes that far surpasses anything on the English River. Therefore, the volume of the Winnipeg River, in low water in particular, would be very much greater than the volume of the English River.

Mr. STEENERSON. How is it when it is high water?

Mr. MEYER. In high water I should judge the English River was greater.

Mr. STEENERSON. You think it was greater?

Mr. MEYER. I should judge so.

Mr. POWELL. Have you ever seen the river?

Mr. MEYER. No; I said before I have not first-hand knowledge of the tributaries of the Winnipeg, because we have not made a study of it, and I am not a competent witness.

Mr. STEENERSON. I am trying to get what you know.

Mr. MEYER. Just my general impression.

Mr. STEENERSON. You have studied the maps?

Mr. MEYER. No; not studied them.

Mr. STEENERSON. You have looked at the maps?

Mr. MEYER. Yes.

Mr. STEENERSON. And you have seen that there are rivers flowing into Winnipeg River?

Mr. MEYER. Yes.

Mr. MIGNAULT. If you are going on much longer with this line of questioning, I would like to say that, for one, I consider the matter is absolutely irrelevant. You should at least disclose what your object is.

Mr. STEENERSON. I understood there was a map of this river which will indicate these tributaries which I refer to.

Mr. POWELL. There are maps of all the watersheds.

Mr. STEENERSON. I understood a general map was introduced.

Mr. MEYER. A map of Canada.

Mr. STEENERSON. Which shows these rivers?

Mr. MIGNAULT. I suppose you can get the information by looking at any map, without asking the witness.

Mr. STEENERSON. I do not intend to tax the patience of the commission at all. I may say my purpose was to support the position I contended for yesterday, that after the water leaves the Lake of the Woods and intermingles with waters belonging to Canada it loses its identity and is not within the province of this present investigation. I wish to show my good faith, regardless of the fact whether it is a tenable position or not.

Mr. MIGNAULT. You made a motion yesterday, but you did not put it in writing, and I think the commission gave you the impression that they could not see, for the moment, that the position you were taking was a good one, under the terms of the reference. Of course, if you wish to make a motion, it should be put in writing, either now or on the argument. I may say that my brother commissioner, Mr. Powell, observed yesterday that you could make any motion you

desired at the time of the final argument. It would be possibly more desirable to do so. However, my view is that this line of questioning at the present moment is irrelevant.

MR. WYVELL. May I say a word? Not knowing what position the United States Government may ultimately take, in all seriousness, I think it is well at this time, or at least at the next hearing, to have a statement of any large tributaries to the Winnipeg River below the Lake of the Woods; that is, if the waters are commingled, so that the water could no longer be identified. It may be a question in which the United States Government may be interested. I am not disclosing what my position may be on that question, because I would have to consult with the State Department, but I think it is an interesting fact if a large river commingles with the Winnipeg River, so that you can no longer identify the waters which leave the Lake of the Woods, and it becomes a matter possibly worthy of some consideration.

MR. MIGNAULT. It may be very relevant when we come to consider the power question.

MR. WYVELL. Yes. I would just as soon take it up then. I think it would be better.

MR. MIGNAULT. But I fail to see any relevancy now.

MR. CAMPBELL. I think the map Mr. Steenerson was asking for can be obtained, showing the Winnipeg River, because the Government surveys have established that, and I understand there are studies being made now with gauges on the Winnipeg River, to show the flow there at all seasons, and to show what proportion it bears to the water contributed from the Lake of the Woods. I presume they will be all presented later on.

MR. STEENERSON. It was my purpose to call these matters to the attention of the commission. I do not want to waste any time, but I want to call the attention of the commission to the fact that there are questions of this kind, and that I shall reduce my motion to writing.

MR. MIGNAULT. It could be more desirable, if you wish to make such a contention, to put it before us in writing, so that it will form part of the record.

MR. STEENERSON. Yes; but I think it is just as well to mention it when it occurs to counsel than to spring it as a surprise later on, when the commission could not give it attention.

MR. KEEFER. You have heard some reference to the sand beaches on the south shore of the Lake of the Woods. You are familiar with that part?

MR. MEYER. Yes; I am familiar with that part there.

MR. KEEFER. Could you describe the sand beaches and what is behind them?

MR. MEYER. I remember the fall—I think it was 1913—when I visited the south shore. I was hung up for a day at Zippel on account of storms, and I walked down toward the mouth of Rainy River for a considerable distance along that sandy beach. I do not recall what the stage was, but that is a matter of record and can readily be determined. At that point there were then the sand beaches for a very considerable distance, and there was water extending back of the sand beaches through swamps, timbered, some coniferous swamp with black ash in them, extending back some distance to higher land. The beaches were evidently cast up. Some

were similar in character to the cast-up shore line, that consists of a peaty vegetable formation at other points along the south shore.

Mr. STEENERSON. I thought we went through with this at the Warroad meeting.

Mr. KEEFER. Would you consider they were of a summer-resort nature, with a swamp behind them?

Mr. STEENERSON. We are not in a position to combat the position now, because this was taken up at Warroad. I am here without witnesses, and it does not seem to be fair to spring this upon us now about the beaches, when he was there and while my witnesses are not here.

Mr. MAGRATH. You brought up the question yourself with other witnesses about the sand beaches this morning.

Mr. STEENERSON. As compared with Canadian beaches, but the actual condition of the beaches on the other side we took up down there.

Mr. MAGRATH. Go on.

Mr. MEYER. I ask for protection in a matter of this kind. It has just been indicated that if I wanted to contradict the witnesses down there they should be here. I have to answer the question when it is asked me.

Mr. KEEFER. I merely ask you for the facts, not for a contradiction at all.

Mr. MEYER. I did not know any question of this kind was going to be asked me whatever, and I do not like to have it appear that I came here to contradict any evidence about the sand beaches on the shore, and I did not know until this second that this question was going to be asked me.

Mr. STEENERSON. We had evidence there that the sand beaches were all submerged.

Mr. KEEFER. I have great confidence in Mr. Meyer's statement, and I want him to make it now. Would you consider the sand beaches on the south shore, with the swamp and water behind it, as of a summer-resort character?

Mr. MEYER. I would say sand beaches of that character would not be as desirable as if there were high ground back of the beaches.

Mr. KEEFER. We have heard some men speak of the lost logs getting in behind the sand beaches. Are there lost logs in behind there?

Mr. MEYER. There were logs thrown up——

Mr. POWELL. I do not think there is anything in this that will affect us.

Mr. KEEFER. We have heard so much of sand beaches, I wanted to ask about it.

Mr. STEENERSON. The fact that the lake was above its natural level has created these sand bars back there.

Mr. MEYER. The ground level is rather low, and I should say offhand, without reference to the map, that under natural conditions some of these areas were, at least, very wet, and at certain seasons would overflow.

Mr. STEENERSON. It is the high level that causes the water to inundate those——

Mr. MAGRATH. If you are going to continue the discussion, I will allow Mr. Keefer to proceed.

Mr. STEENERSON. I will quit. I did not know Mr. Meyer was an expert on sand beaches.

Mr. LAIRD. As to plate 113, I want to ask Mr. Meyer one question. Looking at plate 113, in your volume of plates, you take three points for the computed natural level. Now, I take it in working out your studies you computed the natural level at various other points, did you not, or are these three the only ones you have worked out?

Mr. MEYER. I did not catch your question.

Mr. LAIRD. You commenced in October, 1892, with the computed natural level, first at 1,061, then at 1,059.5, and then at 1,057.

Mr. MEYER. Yes.

Mr. LAIRD. Did you, or did you not, work out the computed natural level from other elevations, say at 1,058 or 1,059?

Mr. MEYER. I think an office computation was made of one additional point in between, but I am not positive which one; as soon as we saw that they were bound to reach the same point in the course of about a year, we just presented these three lines as being typical of the manner, in which the computations led to the same point.

Mr. LAIRD. You say at least there was one other, and it led to the same result?

Mr. MEYER. Yes.

Mr. LAIRD. Are those referred to in connection with your report at all? Is the subject of these computations referred to?

Mr. MEYER. The method of computation is very fully explained, but I do not think reference is made to this other, in view of its being more or less of an incidental application.

Mr. LAIRD. We have here in this plate 113 substantially all your calculations, assuming natural levels. You say there was one other?

Mr. MEYER. I am not certain if I understand what it is you are asking, but if I may be permitted, this plate was merely presented here to give confidence in the computed natural level, because the first fact that would occur to you would be, how can you compute the levels if you do not know what they were at the beginning of this period over which you are attempting to compute them, and the attempt here was to indicate that, even though your assumption might be several feet in error at the close of one year, the computed natural level would be substantially the same, irrespective of the assumption made as to the natural level which prevailed at the beginning of that year.

Mr. LAIRD. But what I had in mind was to ascertain whether you worked out the problem with other assumptions, and I understand you did.

Mr. MEYER. It is my impression it was done. As soon as I reach the office that can be determined. If there is any desire to have the computations made on the basis of the still further assumptions as to the natural level at the beginning of the period, I will be glad to do so. Even though the level were assumed to be 1,065 or 1,055, it would probably reach practically the same point, within half a foot or so, by the end of a year. There would be no difference whatever as to the assumption made.

Mr. KEEFER. The local member for the Ontario Legislature, Capt. Machin, is very sorry that he is not able to be here, but he was called

away to Toronto. He would have recognized your visit here and shown you any attention that lay in his power. He asked that the matter be mentioned to you. The fact that he, being the member of the legislature for the Province of Ontario, was not appearing here may appear rather strange; but he is away in Toronto, and he wants his regrets to be expressed.

Mr. MAGRATH. I had a very kind letter from Capt. Machin, which is before me at the present moment, in which he expressed his regret at not being able to be here. I have no doubt he has confidence in you to look after the Province of Ontario. It is very gratifying to have the public men of the Province take an interest in our work and give us their support as they are doing.

Mr. KEEFER. If we are going to adjourn, I have some correspondence to refer to.

Mr. MIGNAULT. If you have any other witnesses to examine, better call them now.

Mr. KEEFER. I have not, and I do not know what Mr. McLennan may have.

Mr. McLENNAN. I have none.

Mr. MAGRATH. There was a Mr. Richards here yesterday, who wished to give evidence in respect to the flooding of boat houses. We can hear him now.

TESTIMONY OF WILLIAM JOHN RICHARDS.

(William John Richards, having been duly sworn, testified as follows:)

Mr. MAGRATH. Be good enough to state to the commission what you wish to say.

Mr. RICHARDS. The maintenance of the water level here at the stage that it was last spring is detrimental to the best interests of the campers and people of this district. The water is so high that it floods the sand beaches, and it floods the lower parts of lands, and it floods tens of thousands of acres of land around the shores, where the land is low, because the trees fall into the lake where the water washes away the shore line, and it destroys the natural beauty of the lake in the summer time to a very great extent.

Mr. MAGRATH. How much lower do you think the water should be?

Mr. RICHARDS. Well, its present level is about right, in my estimation, or possibly 6 inches lower. I do not think anyone would have any objection to the present level. I talked to a great many campers, and they found last spring a great deal of fault with the water.

Mr. MAGRATH. Do they expect the water to be held at a certain level, without fluctuation?

Mr. RICHARDS. No; but they would strongly object to the lake being converted into a mill pond or anything of that kind.

Mr. TAWNEY. They do not want it above the present level?

Mr. RICHARDS. No.

Mr. MIGNAULT. I understood the present level would be satisfactory as a high-water level for the campers?

Mr. RICHARDS. As a maximum level.

Mr. POWELL. How are you brought into contact with the campers?

Mr. RICHARDS. I have located 104 summer-resort islands and locations for campers and I have had a good deal to do with campers.

Mr. TAWNEY. Do you own a summer resort on any of the islands?

Mr. RICHARDS. I have some interest in some of them.

Mr. CAMPBELL. Have you a camp there?

Mr. RICHARDS. Not a permanent camp. I have a camp in several places.

Mr. CAMPBELL. How do you mean several places?

Mr. RICHARDS. For some years I was engaged in the Sultana mine and high water makes it difficult to prospect.

Mr. CAMPBELL. Have you a summer cottage or anything of that sort?

Mr. RICHARDS. Well, my home is here in Kenora.

Mr. CAMPBELL. Have the campers appointed any deputation to come here?

Mr. RICHARDS. They do not appear to have.

Mr. CAMPBELL. You are speaking for yourself?

Mr. RICHARDS. Well, just giving my opinion.

Mr. KEEFER. The present water is not unsatisfactory?

Mr. RICHARDS. At the present time it is not, but it was in the spring.

Mr. KEEFER. And your objection is of what nature?

Mr. RICHARDS. That it floods the boathouses, it alters the shore line and causes a good deal of inconvenience, and, more than that, there has been estimated to be \$6,000,000 capital invested in these mines. When the water raises it causes the mines to become wet.

Mr. KEEFER. Are you a mining man?

Mr. RICHARDS. Yes; I worked in mining.

Mr. KEEFER. Round here?

Mr. RICHARDS. Yes.

Mr. KEEFER. Speaking of the water level and the boathouses, the docks, and so forth, I suppose the accurate data of the engineers would be the best to go by, as to what the levels of the boathouses are?

Mr. RICHARDS. Yes.

Mr. KEEFER. The commission have all that through their engineers?

Mr. RICHARDS. Yes.

Mr. KEEFER. So that they can deal with that?

Mr. RICHARDS. Yes.

Mr. KEEFER. As regards the flooding of the lands, I suppose the engineers appointed by the commission can speak best as to that?

Mr. RICHARDS. Yes; I suppose so.

Mr. KEEFER. As regards the spoiling of the beauty of the place, they can speak as to that?

Mr. RICHARDS. I do not altogether agree with you there, because the engineers coming here for a year or a short space of time, they go around the lake and the people who live here probably see a little more than they do.

Mr. KEEFER. But they have noticed and observed the high-water marks and ought to know what they are talking about?

Mr. RICHARDS. Yes.

Mr. KEEFER. As regards the mining, would it not be an advantage to be able to have navigation to these mines?

Mr. RICHARDS. The navigation here——

Mr. KEEFER. Would it not be an advantage to have good navigation to the mines?

Mr. RICHARDS. We have had good navigation.

Mr. KEEFER. Please answer my question. Would it not be an advantage to have good navigation?

Mr. RICHARDS. Yes.

Mr. KEEFER. You have heard the other gentlemen speak this morning, several of the prominent citizens of Kenora, of how advantageous good navigation is to the mining properties?

Mr. RICHARDS. Yes.

Mr. KEEFER. How can they get to some islands which otherwise would have to be dropped out; is that correct?

Mr. RICHARDS. Yes, in a sense

Mr. STEENERSON. There always has been navigation to the mines?

Mr. RICHARDS. The place where they had the most difficulty was at Ash Rapids and the Government had deepened that channel, so that they have no difficulty in getting there.

Mr. STEENERSON. I understood they had navigation to the Sultana mine long before there was any change of level?

Mr. RICHARDS. Always had good navigation to it.

Mr. STEENERSON. No trouble about navigation there?

Mr. RICHARDS. No.

Mr. STEENERSON. Never has been?

Mr. RICHARDS. No.

Mr. STEENERSON. In what way does the high level interfere with prospecting?

Mr. RICHARDS. It covers up the wash that exposes the rock, the wave-washed rock along the shore line.

Mr. STEENERSON. And that is the easiest place to prospect?

Mr. RICHARDS. Yes; that is the easiest place to prospect.

Mr. STEENERSON. And as to the natural beauty, you think the people who have lived there for years are better judges than the engineers who are looking to establish the lake level?

Mr. RICHARDS. I think everyone will agree with me in that respect—as to the destruction of any natural beauty, I mean.

Mr. STEENERSON. Would it be just as well to have the level a couple of feet lower than it is now.

Mr. RICHARDS. No; that would be too much.

Mr. STEENERSON. How much do you favor?

Mr. RICHARDS. From the present level to possibly 6 inches lower, but not the high water we had in the spring.

Mr. STEENERSON. But that is as far as you are willing to go?

Mr. RICHARDS. That is my opinion.

Mr. STEENERSON. Supposing it would not be possible to keep the level within 6 inches, they would have to go——

Mr. RICHARDS. Well, they have a dam to control the level, and they should have control of it. There is a big dam there and locks.

Mr. STEENERSON. Would it be all right to have it a foot lower than it is to-day?

Mr. RICHARDS. That would be the limit.

Mr. STEENERSON. Would that be all right for prospecting and summer cottages and camping and all that?

Mr. RICHARDS. Yes; that would be all right, but not more than that.

Mr. STEENERSON. But for prospecting, it would be better to have it still lower than that?

Mr. RICHARDS. Yes; but it would be injurious to other interests.

Mr. LAIRD. There is an organization among the campers here, with officers and commodore, and all the rest of it?

Mr. RICHARDS. Not that I know of.

Mr. LAIRD. Are you quite sure of that?

Mr. RICHARDS. Well, there may be; some few might combine to act for certain purposes.

Mr. LAIRD. Have you ever heard of the Lake of the Woods Yacht Club?

Mr. RICHARDS. Yes.

Mr. LAIRD. What is that?

Mr. RICHARDS. That is a boat sailing club.

Mr. LAIRD. And the membership of that includes nearly all the campers on the islands?

Mr. RICHARDS. Includes a considerable number.

Mr. LAIRD. And they have officers?

Mr. RICHARDS. It includes not half of them, I do not suppose.

Mr. STEENERSON. How many are there of the campers?

Mr. RICHARDS. Well, it has been estimated at from 4,000 to 5,000 here in the summer.

Mr. STEENERSON. But how many of them have locations that you can go and find?

Mr. RICHARDS. It has been estimated that there is 800 locations taken up.

Mr. STEENERSON. Occupied by people who go and live there for two months?

Mr. RICHARDS. Yes, and three months.

Mr. STEENERSON. And you think something approaching one-half of them belong to the yacht club?

Mr. RICHARDS. No.

Mr. STEENERSON. Affiliated with it?

(No answer.)

Mr. KEEFER. Who are the officers of the club?

Mr. LAIRD. On a former occasion there was a letter received and read, from the commodore, Mr. Peters; I believe they change officers from year to year. Do you know who is commodore this year?

Mr. RICHARDS. I do not know.

Mr. LAIRD. Have you a launch of your own?

Mr. RICHARDS. I have a small launch of my own.

Mr. LAIRD. About what size?

Mr. RICHARDS. About 22 feet long.

Mr. LAIRD. What water do you want?

Mr. RICHARDS. About 2 feet.

Mr. KEEFER. I have a copy of affidavit of J. C. Kennedy relating to the making of these water marks, sent in a letter by the president of the Keewatin Power Co., to the honorable commissioner of Crown lands, October 24, 1895. I produce a certified copy.

Mr. POWELL. He was an official of the Government at the time?

Mr. KEEFER. He was commissioner of Crown lands. It was written at the time of the construction of this dam, and inclosing Ken-

nedy's affidavit, setting out the making of these high-water marks, which have been referred to in the testimony and identifying them.

Mr. TAWNEY. Is not the substance of that affidavit in the report of the consulting engineers?

Mr. KEEFER. I am not able to answer that accurately.

Mr. MEYER. It appears in our reports.

Mr. KEEFER. Then it is not necessary to put this in. I would ask my learned friend, Mr. Wyvell, if he would obtain for the commission any data available respecting the reports on the levels of the lake from the war office. I have in my hand what purports to be a copy of Mr. H. C. Gould's report, dated February 25, 1908. He was the assistant engineer. There are several reports in this.

(After discussion.)

Mr. TAWNEY. I would suggest that Mr. Wyvell obtain a properly certified copy of this report, certified by the proper officer as being a correct copy of the original on file.

Mr. WYVELL. Certainly.

Mr. KEEFER. I am to put in, to complete the record, a copy of the agreement relating to the Kenora Dam, in the Province of Ontario, which is being made now, and I hope to give it to you before you leave Kenora.

Mr. TAWNEY. What do you mean by that?

Mr. KEEFER. The Norman Dam.

Mr. TAWNEY. There is also a copy of contract between the Keewatin Power Co. and the Province of Ontario with reference to the conditions under which they are to utilize—

Mr. KEEFER. That is what I refer to; that is being made now. That is the only other document that I am responsible for that I know of. If there is anything else, I would like to know it.

Mr. WYVELL. Mr. Keefer will furnish me with a clean copy of that document and I will have it certified.

Mr. MAGRATH. The consulting engineers have a portion of their report ready, and it is decided that a few copies of those reports will be made available to the interested parties on both sides, merely to facilitate them in proceeding with their work in connection with the power side of this question. They are in galley form and will have to be returned to the consulting engineers when the final report is ready for distribution.

(The hearing then closed.)

(The exhibits herein referred to are on file in the offices of the commission at Washington and Ottawa).

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